DOCUMENT RESUME

ED 430 271 EA 029 787

AUTHOR	Visher, Mary G.; Teitelbaum, Peter; Emanuel, David
TITLE	Key High School Reform Strategies: An Overview of Research Findings. New American High Schools: High Schools at the Leading Edge of Reform.
INSTITUTION	MPR Associates, Berkeley, CA.
SPONS AGENCY	Office of Vocational and Adult Education (ED), Washington, DC.
PUB DATE	1999-03-00
NOTE	100p.
AVAILABLE FROM	ED Pubs, P.O. Box 1398, Jessup, MD 20794-1398; Tel: 877-433-7827 (Toll Free); U.S. Department of Education, Office of Vocational and Adult Education, Rm. 4090, MES, Washington, DC 20202-7100; Tel: 202-205-5451; TDD/FIRS: 800-877-8339: Web site: http://www.ed.gov/offices/OVAE/nahs; e-mail: ovae@inet.ed.gov
PUB TYPE	Legal/Legislative/Regulatory Materials (090)
EDRS PRICE	MF01/PC04 Plus Postage.
DESCRIPTORS	*Change Strategies; *Educational Change; Educational Improvement; Excellence in Education; *High Schools; *Literature Reviews; Program Effectiveness
IDENTIFIERS	New American Schools

ABSTRACT

This document reviews the relevant education literature to assess the evidence that reform strategies, such as those being used in New American High Schools, have affected educational outcomes, including school attendance, grades, skills attainment, graduation rates, and postgraduation activities. The overview focuses on 10 strategies: (1) raise academic standards; (2) create small learning environments enabling students and teachers to work together; (3) structure learning around careers and students' interests; (4) promote student achievement by enhancing educators' professional development; (5) link students' out-of-school learning experiences to classroom learning; (6) provide counseling to encourage indepth college and career awareness; (7) reorganize the school day into flexible, relevant segments; (8) assess students' progress by what they are capable of doing; (9) forge partnerships with two- and four-year postsecondary institutions; and (10) forge active student-support alliances involving educators, employers, parents, and communities. The report is organized by the strategies. Each section begins by defining the concept underlying the strategy and then clarifying the major reasons why the strategy is thought to work. Research studies are cited next. Each section concludes with a summary of the strategy's effectiveness. Sources for the study included electronic databases, publications from organizations that are leaders in promoting or documenting education reform, and individual experts. (RJM)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED 430 271

KEY HIGH SCHOOL REFORM STRATEGIES:

An Overview of Research Findings

BEST COPY AVAILABLE

NEW AMERICAN
HIGH SCHOOLS
U.S. DEPARTMENT OF EDUCATION

HIGH SCHOOLS AT THE LEADING EDGE OF REFORM

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☑ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
● Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

EA 029 787

KEY HIGH SCHOOL REFORM STRATEGIES:

An Overview of Research Findings

by
Mary G. Visher
David Emanuel
Peter Teitelbaum

MPR Associates, Inc.
2150 Shattuck Avenue, Suite 800
Berkeley, CA 94704
(510) 849-4942

MARCH 1999

NEW AMERICAN
HIGH SCHOOLS
U.S. DEPARTMENT OF EDUCATION

HIGH SCHOOLS AT THE LEADING EDGE OF REFORM

Supported by the Office of Vocational and Adult Education, U.S. Department of Education

The full text of this public domain publication is available at the Department's home page at http://www.ed.gov/offices/OVAE/nahs and in alternate formats upon request. For more information, please contact us at:

U.S. Department of Education
Office of Vocational and Adult Education
Room 4090, MES
Washington, D.C. 20202-7100
http://www.ed.gov/offices/OVAE/nahs
E-mail: ovae@inet.ed.gov
Telephone: (202) 205-5451
TDD / FIRS 1-800-877-8339, 8 a.m.–8 p.m., ET, M–F

ACKNOWLEDGMENTS

The authors would like to thank all those who contributed to the production of this report. At MPR Associates, Paula Hudis, Gary Hoachlander, and Elliott Medrich provided insightful review and comments on earlier drafts; Shierra Merto provided library research assistance; Andrea Livingston edited the report; and Karyn Madden formatted the document.

We would also like to acknowledge the useful feedback we received from several Department of Education staff: First and foremost, Ivonne Jaime, who coordinated the reviewers' comments, and Jackie Frederich, Richard Hernandez, and George Spicely.

TABLE OF CONTENTS

Page

Acknowledgments iii

Introduction 1

Raise Academic Standards and Expectations 5

Create Small Learning Environments Enabling Students and Teachers to Work Together 19

Structure Learning Around Careers and Students' Interests 27

Promote Student Achievement by Enhancing Educators' Professional Development 37

Link Students' Out-of-School Learning Experiences to Classroom Learning 47

Provide Counseling to Encourage In-Depth College and Career Awareness 57

Reorganize the School Day Into Flexible, Relevant Segments 65

Assess Students' Progress by What They Are Capable of Doing 73

Forge Partnerships With Two- and Four-Year Postsecondary Institutions 79

Forge Active Student Support Alliances Involving Educators, Employers, Parents, and Communities 87

INTRODUCTION

Throughout the country, schools and communities are working hard to reform[1] high schools so that these schools can better prepare students for the new realities and challenges of an increasingly technological and competitive global economy.[2] To support and highlight these efforts, the U.S. Department of Education has, to date, selected 17 sites that represent the spectrum of secondary schools located throughout the United States. These *New American High Schools* are trying out innovative strategies that combine career and academic preparation in environments designed to motivate *all* students and improve their prospects for success in both the classroom and their careers. These schools have been the focus of an ongoing study sponsored by the Department of Education, conducted initially by the National Center for Research in Vocational Education (NCRVE) and later by MPR Associates, Inc.

Ten Reform Strategies

As part of that study and to inform the debate around secondary education reform, the Department of Education contracted with MPR Associates, Inc. to prepare an overview of the relevant education literature. The purpose of the overview is to assess the research evidence that the reform strategies such as those being used in the ten *New American High Schools* have affected outcomes such as school attendance, grades, skills attainment, graduation rates, and post-graduation activities in other schools undertaking similar efforts. The research team selected the following ten strategies to focus on:[3]

- ★ Raise academic standards and expectations.
- ★ Create small learning environments enabling students and teachers to work together.

---

[1] It is worthwhile to clarify our use of the words "school reform" or "reforming schools." As used in this overview, "reform" is a process that includes two components: 1) the promotion of ambitious student outcomes for all students; and 2) the alignment of practices and actions within a school and sometimes a district or a state to promote such outcomes. The term "school reform" should be distinguished from other, related terms such as "systemic reform," which always involves restructuring the governance system to support reform (Goertz, Floden, & O'Day, 1996); "systemwide reform," which usually involves other social institutions besides schools; and "restructuring reform," which usually involves "altering authority and accountability systems" (Cohen, 1990).

[2] For an excellent review of the literature documenting these new trends, see Stasz (1995).

[3] This list is not intended to include all the strategies being used by the *New American High Schools* or other schools involved in reform. However, it does represent most of the key improvement strategies of these high schools.

★ Structure learning around careers and students' interests.

★ Promote student achievement by enhancing educators' professional development.

★ Link students' out-of-school learning experiences to classroom learning.

★ Provide counseling to encourage in-depth college and career awareness.

★ Reorganize the school day into flexible, relevant segments.

★ Assess students' progress by what they are capable of doing.

★ Forge partnerships with two- and four-year postsecondary institutions.

★ Forge active student support alliances involving educators, employers, parents, and communities.

Understanding "what works" or "what matters" in the context of high school reform has important implications for both policy and practice. A targeted overview, such as this one, of current, key studies on education reform practices in secondary schools holds the promise of informing the debate currently surrounding high school reform. Also, this overview can provide education practitioners with a rich source of information to help them make informed decisions about which practices to implement or stress in their overall reform efforts.

Readers should be aware of two additional points while browsing through the research reported here. First, although the overview treats each of the ten reform strategies separately, none of the strategies *by themselves* should be expected to make a significant difference in any one school. That is, the available evidence suggests that it is *the gathering of several strategies under one roof,* especially certain combinations of strategies, that matters. For example, simply introducing career-focused learning without providing the necessary support and training to teachers who deliver the material is unlikely to have any measurable effect on student achievement. Second, schools should adapt strategies to fit their own unique circumstances. Unfortunately, there is no single, correct way to implement reforms such as smaller learning environments, in-depth counseling, or stronger alliances with community organizations. Each school must set their own goals, and then carve their own path towards meeting their objectives, using lessons from other schools but always adapting them to fit their own realities.

Selection of Studies

Several features distinguish this literature review from others in the field. First, studies were selected only if they contained *empirical data*. This is an essential feature of the overview because, as mentioned above, its primary objective is to assess whether certain reform strategies, either alone or in combination with other practices, make a measurable difference in the lives of high school students. While the field of education abounds with theoretical work on what "should be," far fewer studies use empirical data to describe "what is," much less "what works." The latter question—"what works"—represented the second criterion for including studies in this overview, and studies that use data to *evaluate* the effects of practices were given priority. The overview discusses both qualitative and quantitative research, as long as the data and methodology appeared to be relatively sound. Third, because the reform strategies examined here are all current—with many evolving out of relatively new initiatives such as the School-to-Work Opportunities Act of 1994—this overview emphasizes the *most recent research,* excluding all but the most pivotal studies published before 1990. Fourth, this overview focuses on high school reform. The research team selected studies that present research on elementary or middle schools only if they also included findings that would be directly relevant to high schools. Finally, with few exceptions, only published works are included in the discussion.

Using these five criteria (that the study have at least some empirical content, include an evaluative component, be written in the last five years, have relevance to high schools, and be published) in their search, the authors came up with nearly 300 references to reports, articles, and books. Although the use of these restrictions ensured that the objectives of this overview were met, a large number of authors and works were excluded in the process. Thus, for more comprehensive coverage of topics in the field of secondary education research, readers should refer to the many excellent published literature reviews, many of which are listed in the Suggested Reading at the end of each section.

Sources

Several sources were used to identify the publications presented in this overview. Applying the criteria just described, the authors searched electronic databases such as the Educational Resources Information Center (ERIC) and the database maintained by NCRVE. In addition, they obtained publications lists from organizations and institutes that are leaders in promoting or documenting education reform and have published reports relevant to at least one of the ten reform strategies. Finally, the authors consulted with individual experts in selected fields to ensure that no key studies were omitted.

Organization of This Overview

This overview discusses the individual reform strategies separately, presenting them in the order listed above. Although each section may be organized slightly differently depending on the topic and the amount and type of research available, they all begin by defining the concept underlying the strategy and then clarifying the major reasons why the strategy is thought to work. Research studies are cited next, emphasizing those where findings describe the prevalence and range of activities that high schools use to support each strategy, and any empirical evidence that these practices produce desirable outcomes. Each section concludes with a summary that stresses the extent to which each strategy works to improve student outcomes. Following the summary is a list of all references cited in the section as well as a Suggested Reading list.

References

Cohen, M. (1990). Key issues confronting state policymakers. In R.F. Elmore and Associates (Eds.), *Restructuring schools: The next generation of educational reform.* San Francisco: Jossey-Bass, 251–288.

Goertz, M., Floden, R., & O'Day, J. (1996). *Systemic reform: Studies of education reform.* Washington, DC: U.S. Department of Education, Office of Educational Research and Improvement.

Stasz, C. (1995). *The economic imperative behind school reform: A review of the literature.* Berkeley, CA: National Center for Research in Vocational Education.

RAISE ACADEMIC STANDARDS AND EXPECTATIONS

Introduction

At the heart of most secondary school reform is the goal of ensuring that all students reach their full academic potential. When reformers talk about raising standards and expectations, they are referring to a set of different strategies schools use to achieve this goal. Such strategies rest on the premise that when the "bar" is raised and standards are set high, students "get" the message that teachers and parents expect the best. Then, it is hoped, students respond and their achievement goes up. Key to this argument is the belief that expectations and standards need to be high for *all* students, including those who have difficulties learning theoretical and abstract material and those judged to be at-risk for failure or dropping out.

The notion that teachers and schools can raise academic performance by simply expecting high performance is well accepted throughout the educational community. This idea first found support in research that was conducted after Rosenthal and Jacobson published their landmark study in 1968. This and subsequent work has demonstrated quite convincingly that teachers tend to form quick and early impressions of students' abilities, and then treat or teach students differently according to these first impressions. Children whom teachers initially view as good students (who are more often than not white and come from families with higher socioeconomic status) consistently tend to outperform students whom teachers see as having lower potential. This sequence of behaviors occurs even when teachers are "tricked" in experiments into believing that randomly chosen pupils are high performers. Ever since Rosenthal and Jacobson (1968) first identified this phenomenon, it has been documented and validated in many experiments and studies.

In recent years, many researchers have studied the underlying mechanisms explaining this phenomenon, including the ways in which students' motivational levels hinge on teacher expectations (Wineburg, 1987; Brophy, 1983; Cooper & Good, 1983; Jetter & Davis, 1973; Rist, 1970; Brattesani, Weinstein, & Marshall, 1984; Marshall & Weinstein, 1984; Weinstein, 1983). The evidence continues to accumulate showing that perceptions of student ability, no matter how well or poorly they are grounded in factual evidence, exert a powerful influence on both teachers' and students' expectations and hence on students' academic performance.

The "expect more, get more" message from this line of research has been heard loud and clear by many school leaders and teachers hoping to raise academic achievement. Although the methods schools use to get the message across are diverse, the logic is the same for all of them—motivate students by raising expectations. In this section studies are cited that pertain to the practices that schools commonly use to apply the "expect more, get more" idea, that is:

- Increasing the rigor of academic curricula;
- Holding students to the same expectations by eliminating tracking and low-level academic courses; and
- Integrating academic and vocational curricula.

Increasing the Rigor of Academic Curricula

Many schools are raising their expectations by requiring all students to complete an upgraded academic and technical core of course material and subjects. There is no shortage of research showing that requiring more academically challenging courses raises students' proficiency. Over the past decade, several analyses of the test scores of high school students have found that students who complete more mathematics courses score higher on standardized tests than students who do not complete these courses (Rock & Pollack, 1995; Hoffer, Rasinski, & Moore, 1995). The data on which many of these studies are based are very solid. The Rock and Pollack study, for example, was based on the test scores of approximately 10,000 students in a nationally representative sample used for the National Education Longitudinal Study of 1988 (NELS:88). Responding to this kind of evidence of the power of upgrading curriculum, many states have recently enacted legislation requiring high school students to complete more years of academic coursework in order to graduate (Blank & Gruebel, 1993).

Some warn that simply increasing the number of courses required is not a sufficient condition to improve test scores, and argue that quality may matter as much as the quantity. Also, when schools raise the number of required courses too much, some fear that the curriculum may become diluted (Porter, 1995; Wilson & Rossman, 1993; Clune & White, 1992).

Results from the NELS:88 suggest that there may be some support for these fears. Average mathematics achievement scores of high school seniors attending schools that required three years of mathematics were not significantly higher than those of students attending schools that required only two years of mathematics. Hoffer (1997) speculated that the underlying reason for this apparent paradox is that an additional year of mathematics may not be enough to make a difference. An alternative explanation is that the quality of the courses matters, as much as the quantity.

The bulk of the evidence nonetheless indicates that since states have begun enacting legislation increasing graduation requirements, the percentage of high school graduates completing more difficult courses has risen. For example, the percentage of students completing at least a first-year algebra course rose from about 54 to 66 percent between 1982 to 1994 (U.S. Department of Education, 1996). The percentage of students completing geometry and second-year algebra also increased sharply (48 to 70 percent and 37 to 56 percent, respectively), as did the number of students completing trigonometry and calculus. Student achievement in mathematics, as measured by the National Assessment of Educational Progress (NAEP) exam, also showed significant increases in average mathematics proficiency of 17-year-old students (Gorman, 1994).[4]

Another study provides further reason to attribute improved achievement to more rigorous requirements and expectations. Studies conducted by the Southern Regional Education Board's (SREB) *High Schools That Work (HSTW)* network found that students who completed the recommended course requirements in the core subjects of mathematics, reading, and science scored significantly higher on the *HSTW* Assessment Test (administered by the Educational Testing Service) than did students in a comparison group. Furthermore, students who completed the college-prep curriculum in *HSTW* schools scored higher on the test than did vocational students in public high schools (Bottoms & Creech, 1997).

Holding Students to Different Expectations

As mentioned previously the strategy of setting higher standards for high school students almost always carries with it the premise that higher standards should be set for *all* students, not just the "academically inclined" or college-bound students. The research offers considerable support to those who believe that tracking students into ability groups is an unfortunate mistake.

---

[4] Unfortunately, it is not possible to link the NAEP achievement data with transcript information, so it is impossible to determine whether the wave of high graduation requirements led to higher achievement. However, the circumstantial evidence is certainly compelling.

Although contemporary high schools rarely maintain *formal* tracking structures, the vast majority of schools find ways to divide students on some measure of ability for at least some subjects. As an example, high schools sort students into honors, regular, basic, and special education classes. Many studies have assessed the effects of tracking on student achievement, and most have concluded that sorting students by ability results in increasing inequalities among students over time (Hallinan, 1994). The field is indeed rich with studies that have compared the achievement of students across ability group levels and have shown how these differences tend to widen over the years. Not unexpectedly, a large body of research has documented that students in high-ability groups ultimately attain higher levels of achievement and learn at a faster pace than their peers in low-ability groups (Gamoran, Nystrand, Berends, & LePore, 1995; Hallinan, 1994; Oakes, Selvin, Karoly, & Guiton, 1992; Bottoms & Creech, 1997; Applebee, 1996; Fuhrman & Malen, 1991).

A number of alternatives to tracking have been suggested, including the elimination of the most rigid forms of tracking, upgrading of curriculum for all students, transition classes for students who need them, and implementing strong incentive systems. One alternative to tracking that has begun to win wide appeal in high schools is to upgrade the quality of the curriculum by integrating academic and vocational curricula and/or by requiring *all* students to complete a certain number of core academic courses. The following section describes the research that addresses whether such practices raise the achievement of all students.

Integrating Academic and Vocational Curricula

Early educational thinkers such as John Dewey first articulated the benefits of designing more coherent and coordinated curricula in the early part of the century (Grubb, Davis, Lum, Phihal, & Morgaine, 1991; Grubb, 1995). Since then, the idea of reuniting applied and academic learning has always found a strong theoretical voice in educational thinking. One of the strongest rationales for integration is the "economic imperative"—that is, employers are increasingly seeking workers who possess skills such as problem solving, decision making, and higher order thinking, and integration can be a vehicle for helping students attain these skills (Resnick, 1987; Nielsen-Andrew & Grubb, 1992). In addition, contemporary supporters stress that integration provides instruction in a meaningful, relevant setting that will improve student motivation, promote active learning, and ultimately raise student achievement.

Although conceptual models of integration have great appeal, and strong cases have been made for their widespread adoption, relatively little is known about how various integration practices or models affect student achievement, or how they can be best implemented. However, some progress, at least, has been made in *characterizing* approaches to integration: Grubb et al. (1991), for instance, developed the most commonly cited set of models. Evaluations and case studies of two of these approaches—making academic courses more occupationally relevant and incorporating academic content into vocational courses—are presented in the next section.

Making Academic Courses More Occupationally Relevant

The most commonly used approach to integrating academic and vocational education is to infuse academic courses with more examples from work and occupations. Until recently, this frequently entailed adopting "off-the-shelf" applied academics materials. Unfortunately, little systematic evaluation of these materials has been done to compare the relative efficacy of applied academics with that of more traditional curriculum. Stasz, Kaganoff, & Eden (1994) reviewed five of the handful of published studies in this area, all of which used survey or test data. Only one provided good evidence that students enrolled in applied courses (Applied Mathematics and Principles of Technology) increased their knowledge and skills in mathematics and science. The other studies did not provide clear findings showing that off-the-shelf integrated curriculum resulted in higher achievement among students than did conventional curriculum. Stasz et al. (1994), however, noted a number of methodological problems with each of these studies.

Findings from other studies show a similar ambiguous result. In a report from Northwest Laboratory, the authors provided fairly strong evidence that students enrolled in applied academics courses improve their academic achievement (Wang & Owens, 1995). This study tracked the achievement of 1,340 students who took Applied Mathematics and that of 2,104 students who took Principles of Technology, another integrated course, in 60 high schools in the state of Washington. Students taking these two applied courses and students in a comparison group were given pre- and post-achievement tests. The researchers found that the students who took the Applied Mathematics course scored higher on standardized test items (18.9) than those in a comparison group (14.7). They also observed that students who were at the lower end of the academic achievement scale tended to gain the most from taking applied academics courses. However, the students who took the Principles of Technology courses did not score higher than the students in the comparison group.

These ambiguous findings also characterize other studies. Improved achievement was observed in a 1992 Indiana study of the effects of state-funded applied academics pilot projects on student achievement. The evaluator found that students who took the applied academics courses showed more than twice the gain as students in a control group. However, another study compared the test scores of 300 completers of Applied Mathematics 1 and 2 and 800 completers of traditional Algebra I from 20 schools in 13 states. The study found no statistically significant differences between the mean test scores of the two groups of students (Pebble & O'Connor, 1992).

Making Vocational Courses More Academic

While the evidence is mixed whether making academic courses more applied results in higher student achievement, some research findings suggest that the opposite strategy may work better—making vocational courses more academic. As an example, in a study of 15 high schools that were part of the Southern Regional Education Board (SREB) network (where integration of academic and vocational curricula is a top priority), students' academic performance was tracked over three years (Bottoms & Mikos, 1996). The SREB researcher observed that skills in reading, mathematics, and science of career-bound students improved substantially in seven of the 15 schools, although exactly what caused these improvements is not clear.

Using data from the *HSTW* Assessment Test, site visits, and student and teacher surveys, SREB found that the seven schools where achievement improved most dramatically had expanded their efforts to integrate academic and vocational education (Bottoms & Mikos, 1996). More students at these schools in 1993 than in 1990 reported that vocational teachers often stressed reading, mathematics, and science, and more students in these schools read technical materials, solved mathematics problems related to vocational studies, and completed projects assigned jointly by their vocational and academic teachers. The percentage of students at these "high-performing schools" who reported that their mathematics, science, and English teachers related academic content to real-world situations also increased. Finally, it was reported that the most improved schools provided more time for academic and vocational teachers to collaborate on developing integrated teaching strategies than did the other schools (Bottoms & Creech, 1997).

Findings from the Advanced Integration Model (AIM) project (Bottoms & Creech, 1997) also suggest that the project's increased integration efforts led to improved student performance, although their evaluation design had a number of limitations.[5] The researchers reported that after two years of intensive integration planning and development activities, the reading and mathematics scores of students at the AIM schools rose and increases in achievement were greater than those at the *HSTW* sites with more limited integration efforts. The authors attributed the increased academic performance of career-bound students at the AIM schools to the fact that AIM sites: 1) taught higher-level academic and vocational content to career-bound students; 2) used more engaging instructional strategies; 3) set higher standards and required more effort from their students; 4) provided guidance in helping students select and complete a challenging program of study; and 5) created a climate for continuous improvement.

Summary

Raising academic standards and expectations is a broad reform strategy, encompassing many different practices. One can conclude with some certainty that a solid foundation underlies many of the practices used to meet this objective—students tend to perform better when expectations are high. Numerous studies have demonstrated that teacher expectations have a direct and powerful influence on student motivation, self-perceptions of ability, and performance.

To improve the performance of all students, schools have been engaged in a range of innovative practices that include eliminating tracking students by ability, integrating academic and vocational curricula, and raising graduation requirements. This overview examined studies that attempted to assess the relationship between such practices and improved student performance. A substantial body of literature, taken together, provides relatively strong evidence that such practices do indeed influence student outcomes.

Tracking, for example, has been shown to have a powerful and detrimental effect on students labeled as low-achievers. Students tracked into lower achieving groups tend to perform less well than students tracked into higher achieving groups, and, more importantly, these differences tend to increase over time. In addition, introducing more rigor into academic core courses is another practice that has been shown to have positive effects on learning. Many, although not all, studies show that when students take harder or more courses, they obtain higher scores on achievement tests. The final set of practices discussed in this section, integrating academic and vocational curricula, receives less empirical support in the literature. Although increasingly studied, strategies designed to introduce academic skills into vocational curriculum, as well as making academic learning more relevant and practical by introducing meaningful applications, are not yet firmly validated by research findings.

---

[5] These included the project's premature termination after two years, the small number of students tested at each site, the fact that there was no control group of non-AIM students available for testing and that some sites had been in the *HSTW* network for a number of years and had already made progress in integrating curriculum.

Integration, either through infusing of academic material into vocational curriculum or through introducing real-world material into academic curriculum, is a relatively new approach. The ambiguous findings from a currently limited body of research suggest that when integration is attempted, academic standards should not be weakened or compromised. Integration needs to be structured, have high standards, and be driven by academic content. Without that, integration can too easily become "integration for the sake of integration," and lose its potential for boosting academic achievement.

References

Applebee, A.N. (1996). *Curriculum as conversation: Transforming traditions of teaching and learning.* Chicago: University of Chicago Press.

Blank, R., & Gruebel, D. (1993). *State indicators of science and mathematics education, 1993.* Washington, DC: Council of Chief State School Officers.

Bottoms, G., & Creech, B. (1997). *Reading performance of career bound students: Good news for the 1996 High Schools That Work assessment.* Atlanta, GA: Southern Regional Education Board.

Bottoms, G., & Mikos, P. (1996). *Seven most-improved High Schools That Work sites raise achievement in reading, mathematics, and science.* Atlanta, GA: Southern Regional Education Board.

Brattesani K.A., Weinstein, R.S., & Marshall, H.H. (1984). Student perceptions of differential teacher treatment as moderators of teacher expectation effects. *Journal of Educational Psychology, 76*, 236–247.

Brophy, J.E. (1983). Research on the self-fulfilling prophecy and teacher expectations. *Journal of Educational Psychology, 61*, 365–374.

Clune, W., & White P. (1992). *Education reform in the trenches.* Washington, DC: Education Evaluation and Policy Analysis.

Cooper, H.M., & Good, T.L. (1983). *Pygmalion grows up: Studies in the expectation communication process*. New York: Longman.

Fuhrman, S.H., & Malen, B. (Eds.). (1991). *The politics of curriculum and testing: 1990 yearbook of the politics of education associations.* London: Taylor and Francis Press.

Gamoran, A., Nystrand, M., Berends, M., & LePore, P. (1995, Winter). An organizational analysis of the effects of ability grouping. *American Educational Research Journal, 32*(4), 687–715.

Gorman, S. (1994). *NAEP 1992 trends in academic progress.* Washington, DC: U.S. Department of Education, National Center for Education Statistics.

Grubb, N. (1995). *Education through occupations in American high schools.* New York: Teachers College Press.

Grubb, N., Davis, G., Lum, J., Phihal, J., & Morgaine, C. (1991). *The cunning hand, the cultured mind: Models for integrating vocational and academic education.* Berkeley, CA: National Center for Research in Vocational Education.

Hallinan, M. (1994). *Restructuring schools: Promising practices and policy.* New York: Plenum Press.

Hoffer, T. (1997). *High school graduation requirements: Effects on dropping out and student achievement.* New York: Teachers College Press.

Hoffer, T., Rasinski, T.V., & Moore, C. (1995). *Social background differences in high school mathematics and science course taking and achievement.* Washington, DC: U.S. Department of Education, National Center for Education Statistics.

Jetter, J., & Davis, O. (1973). *Elementary school teachers' differential expectations of pupil achievements*. Paper presented at the annual meeting of the American Educational Research Association.

Marshall, H.H., & Weinstein, R.S. (1984). Classroom factors affecting students' self-evaluations: An interactional model. *Review of Educational Research, 54*, 301–325.

Nielsen-Andrew, E., & Grubb, N. (1992). *Making high schools work: Patterns of school reform and the integration of vocational and academic education.* Berkeley, CA: National Center for Research in Vocational Education.

Oakes, J., Selvin, M., Karoly, L.A., & Guiton, G. (1992). *Educational matchmaking: Academic and vocational tracking in comprehensive high schools.* Santa Monica, CA: The RAND Corporation.

Pebble, J., & O'Connor, F. (1992). *An evaluation of the applied mathematics and applied communication demonstration sites in Indiana.* Prepared for the Wabash Valley Vocational Cooperative and the Indiana Department of Education.

Porter, A.C. (1995, January-February). The uses and misuses of opportunity-to-learn standards. *Educational Researcher, 24*(1), 21.

Resnick, L.G. (1987). Learning in school and out. *Educational Researcher, 19*(9), 13–20.

Rist, R.C. (1970). Student social class and teacher expectations: The self-fulfilling prophecy in ghetto education. *Harvard Educational Review, 40*, 411–450.

Rock, D., & Pollack, J.M. (1995). *Mathematics course-taking and gains in mathematics achievement.* Washington DC: U.S. Department of Education, National Center for Education Statistics.

Rosenthal, R., & Jacobson, L. (1968). *Pygmalion in the classroom: Teacher expectation and pupils' intellectual development.* New York: Holt, Rinehart & Winston.

Stasz, C., Kaganoff, T., & Eden, R.A. (1994). Integrating academic and vocational education: A review of the literature, 1987–1992. *The Journal of Vocational Education Research, 19*(2), 25–72.

U.S. Department of Education, National Center for Education Statistics (NCES). (1996). *The 1994 high school transcripts study tabulations: Comparative data on credits earned and demographics for 1994, 1990, 1987, and 1982 high school graduates.* Washington, DC: Author.

Wang, C., & Owens, T. (1995). *The Boeing Company's Manufacturing Technology Student Internship evaluation report 1994–1995.* Portland, OR: Northwest Regional Educational Laboratory.

Weinstein, R.S. (1983). Student perceptions of schooling. *Elementary School Journal, 83*, 289–312.

Wilson, B.L., & Rossman, G.B. (1993). *Mandating academic excellence.* New York: Teachers College Press.

Wineburg, S.S. (1987). The self-fulfillment of the self-fulfilling prophecy. *Educational Research, 16*(9), 28–37.

Suggested Reading

Baker, R., Wilmoth, J.N., & Lewis, B. (1989). *Factors affecting student achievement in a high school principles of technology course: A state case study.* Auburn University: Center for Vocational and Adult Education.

Bottoms, G., Creech, B., & Johnson, M. (1997, June). Academic and vocational teachers working together contribute to higher levels of student achievement. *High Schools That Work Research Brief, 9,* 1–8.

Bragg, D. (1994). *Tech prep implementation in the United States: Promising trends and lingering challenges.* Berkeley, CA: National Center for Research in Vocational Education.

Bragg, D., Kirby, C., Puckett, P., Trinkle, K., & Watkins, L. (1994). *Building a preferred future with tech prep systems.* Berkeley, CA: National Center for Research in Vocational Education.

Bucci, P. (1995). *PACE Model Tech Prep Education Project: Evaluation report.* Washington, DC: Academy for Educational Development.

California Postsecondary Education Commission. (1992). *Eligibility of California's 1990 high school graduates for admission to the state's public universities.* Sacramento, CA: Author.

Center for Occupational Research and Development. (1994a). *Applications in biology/chemistry: Evaluation of an applied science curriculum.* Waco, TX: Author.

Center for Occupational Research and Development. (1994b). *A report on the attainment of Algebra 1 skills by completers of Applied Mathematics 1 and 2.* Waco, TX: Author.

Chilson, M.P. (1992). *An evaluation of a statewide admission standards policy.* Denver, CO: Colorado Commission on Higher Education.

Clark, R.M. (1990, Spring). Why disadvantaged students succeed. *Public Welfare, 48*(2), 17–23.

Colorado State Department of Education. (1995). *High expectations, high achievements: State report card 1995. K–12 public education in Colorado.* Denver, CO: Author.

Crain, R.L., Allen, A., Thaler, R., Zellman, G.L., Quigley, D.D., Stone III, J.F., Bremer, C., Sullivan, D., & Little, J.W. (1997). *The effects of magnet education on high schools and their graduates.* Berkeley, CA: National Center on Research in Vocational Education.

Crain, R.L., Heebner, A.L., Si, Y.-P., Jordan, W.J., & Kiefer, D.R. (1992). *The effectiveness of New York City's career magnet schools: An evaluation of ninth grade performance using an experimental design.* Berkeley, CA: National Center for Research in Vocational Education.

Decision Information Resources. (1995). *Evaluation of tech prep system development and implementation in Texas public schools and institutions of higher education.* Houston, TX: Author.

Flannagan, P. (1992). *Raising standards: State policies to improve academic preparation for college.* Washington, DC: Westat, Inc.

Foothill Associates. (1997). *California partnership academies 1995–1996 evaluation report.* Nevada City, CA: Author.

Hershey, A., Hudis, P., Silverberg, M., & Haimson, J. (1997). *Partners in progress: Early steps in creating school-to-work systems.* Princeton, NJ: Mathematica Policy Research, Inc.

Maddy-Bernstein, C., Matias, Z.B., Cunanan, E.S., Krall, B.T., Kantenberger, J.A., & Iliff, L. (1995). *Inclusion/detracking: A resource guide.* Berkeley, CA: National Center for Research in Vocational Education.

Mapp, K. (1997). *Making the connection between families and schools.* Cambridge, MA: Harvard Graduate School of Education.

McKillip, W.D., Davis, E.J., Koballa, T.R. Jr., & Oliver, J.S. (1993). *A study of applied mathematics and principles of technology relative to the college prepatory curriculum: Final report.* Athens, GA: University of Georgia.

Nathan, J. (1995, February 15). To improve high schools, change college admission policies. *Education Week, 14*(21).

Perry, N. (1993, November 29). School reform: Big pain, little gain. *Fortune,* pp. 130–138.

Pollack, J. (1995). *The relationship between gains in achievement in mathematics and selected course taking behaviors.* Washington, DC: U.S. Department of Education, National Center for Education Statistics.

Rahn, M.L., Alt, M.N., Emanuel, D., Ramer, C.G., Hoachlander, E.G., Holmes, P., Jackson, M., Klein, S.G., & Rossi, K. (1995). *Getting to work: A guide for better schools.* Berkeley, CA: National Center for Research in Vocational Education.

Shavelson, R.J., Baxter, G.P., & Gao, X. (1993, Fall). Sampling variability of performance assessments. *Journal of Educational Measurement, 30*(3), 215–232.

Shepard, L., & Dougherty, K. (1991). *Effects of high stakes testing on instruction.* Paper presented at the annual meeting of the American Educational Research Association and the National Council on Measurement in Education, New Orleans.

Silverberg, M. (1995). *The emergence of tech-prep at the state and local levels.* Princeton, NJ: Mathematica Policy Research, Inc.

Silverberg, M. (1996a). *Building school-to-work systems on a tech-prep foundation.* Princeton, NJ: Mathematica Policy Research, Inc.

Silverberg, M. (1996b). *The continuing development of local tech-prep initiatives.* Princeton, NJ: Mathematica Policy Research, Inc.

Stern, D., Dayton, C., Paik, I., & Weisberg, A. (1989, Winter). Benefits and costs of dropout prevention in a high school program combining academic and vocational education: Third-year results from replications of the California partnership academies. *Educational Evaluation and Policy Analysis, 11*(4), 405–416.

Stern, D., Raby, M., & Dayton, C. (1992). *Career academies: Partnerships for recontructing American high schools.* San Francisco, CA: Jossey-Bass.

CREATE SMALL LEARNING ENVIRONMENTS ENABLING STUDENTS AND TEACHERS TO WORK TOGETHER

Introduction

Increasingly over the last decade, the education community in states, urban school districts, and schools has embraced the concept of small learning environments as a vehicle for boosting student achievement. This concept is central to a number of reform efforts, including California's career academies, the Coalition of Essential Schools, the multi-state charter schools movement, and improvement efforts in cities such as New York, Philadelphia, and Chicago (Raywid, 1995). Typically, but not always, the creation of small learning environments involves dividing a large school into smaller schools-within-a-school and identifying a particular career focus or theme that will be used to organize curricula and out-of-school learning experiences. This section describes the research assessing the effects of small learning environments, with a focus on the following topics:

- The relationship between small environments and learning;
- School size and student performance: an indirect effect; and
- A downside of smallness.

It is worth recalling that while researchers have little trouble *theorizing* about the effects of smaller learning environments on student outcomes, it is difficult to test these ideas. Typically, schools try to reshape their organizational and instructional practices using a variety of strategies, and that of creating small learning environments is just one of many. Sorting out which practices produce which outcomes is not only difficult from a methodological point of view, but also not particularly useful. Most successes of whole-school reform efforts are not the consequence of one practice or another, but instead the gathering of many practices under one roof and the interactions among them. Small schools and learning environments, particularly those that entail career-focused education, are excellent examples of practices that are difficult to desegregate and assess.

Nevertheless, educational researchers and reformers have energetically promoted small learning environments, primarily because of the perceived benefits for students.

Raywid (1995), for example, offered a long list of outcomes small schools are expected to generate—such as better results for at-risk students, improved school climate, more personalized education for all students, stronger bonds between teachers and students, lower dropout rates, removal of "tracks," and more empowerment of teachers.

The Relationship Between Small Environments and Learning

The literature on small schools is quite extensive and has a long history in social science (Hill, Foster, & Gendler, 1990; Hallinan, 1994). Several comprehensive reviews of studies have addressed the effects of smaller learning environments on student outcomes as have evaluations of reform efforts aimed at creating small learning environments (Klonsky, 1995; Lee, Bryk, & Smith, 1993).

A number of studies have found that small school size leads to improvements in students' grades and test scores (Raywid, 1995; Klonsky, 1995; Meier, 1995a, 1995b). In one recent evaluation of the effects of school size on academic achievement, Lee et al. (1993) assessed how a number of reform strategies affected student gains in engagement and achievement in four subjects.[6] These researchers identified school size as a key factor in explaining variation in student achievement.

The Coalition of Essential Schools, a network of schools committed to creating more personalized learning environments and improving student engagement in their classes, has documented that improved student learning is due to small learning environments. Combining school downsizing with changes in curriculum and assessment, these schools have improved student performance in a number of areas, including raising test scores and increasing the completion of college-level courses (Coalition of Essential Schools, 1995a, 1995b).

Another study has tried to link the size of the learning environment with student outcomes (Crain et al., 1997). In this study, the researchers concluded that small learning environments can account for a number of positive outcomes including a better school climate, less class-cutting, less drinking, and more college credits earned. However, one should use caution when interpreting the results of this study because it suffers from some methodological weaknesses, including selection bias.[7]

---

[6] Lee and Smith (1995) used ten different survey responses from the NELS tests that measured students' behavior and attitudes about their current high school class.

[7] See the next section on career-focused learning environments for more information about this study.

School Size and Student Performance: An Indirect Effect

Researchers who have studied small schools have stressed that reducing school size alone does not necessarily lead to improved student outcomes. Instead, they have concluded that school size should be seen as having an *indirect effect* on student learning. Lee and Smith (1995) noted that school size acts as *a facilitating factor* for other desirable practices. In other words, school characteristics that tend to promote increased student learning—such as collegiality among teachers, personalized teacher-student relationships, and less differentiation of instruction by ability—are simply easier to implement in small schools.

This finding has been supported by a substantial body of research (Newmann, 1995; Hallinan, 1994; Hill et al., 1990). In these studies, improved student outcomes have been linked to the implementation of key practices, including raising teachers' expectations of students, establishing collective responsibility for student learning, and strengthening external support, all of which depend in large part on the size of the school. Newman (1995), for example, stressed that a school's level of "professional community" had substantial effects on student achievement, and that small school size was one of the conditions necessary to foster a professional community. Similarly, Hallinan (1994) argued that communal organization was harder to achieve in a large school, and Hill et al. (1990) showed that consensus around educational and ethical principles was harder to achieve in large schools.

Raywid (1995) and Klonsky (1995) noted that most of the studies that have assessed the effects of school size on student outcomes suggest that small learning environments enhance the schools' "expressive characteristics"—that is, the "socio-emotional climate" and the human responses and behavior that such a climate influences. Thus, school size has positive effects on student outcomes as evidenced by students' attendance rates, frequency of disciplinary actions, school loyalty, use of alcohol or drugs, satisfaction with school, and self-esteem.

Many schools opt to create smaller learning environments within a larger school rather than downsizing the entire school. There is considerable evidence that the success of small subunits within schools is dependent upon their level of autonomy from the "parent" school. As an example, Crain et al. (1997) found that programs that maintained separate classes for students attending small magnet schools had lower dropout rates between junior high and high school, as well as greater improvement in reading skills, than programs where students attended less separate environments. Raywid (1995) concluded that the benefits of smallness appear contingent on the ability of the subschool to

1) Establish a collective identity (separateness);
2) Project clear, identifiable boundaries (autonomy); and
3) Display differences that are perceptible to students (distinctiveness).

Other researchers and educators have also found these three conditions to be essential to the success of small schools. In addition, Meier (1995a, 1995b), Newman (1995), and Hallinan (1994) stressed the need for autonomy, authority, and a decentralized governance structure in small schools.

The Downside of Smallness

Although many educational reformers have agreed that small learning environments usually lead to improved student learning, some have pointed out that large learning environments are not always bad, and that small ones have their own pitfalls. Studies of schools within the Coalition of Essential Schools network found that schools-within-schools can sometimes undermine the cohesion of the whole school, setting up unhealthy competitive relationships. For example, Muncey and McQuillan (as cited in Raywid, 1995) identified certain tensions in the cultural climate of schools that were being downsized, including

- Allegations of favored treatment;
- Isolation of some faculty members from the larger school faculty;
- Increased perceived need to appear successful to one's colleagues;
- Lack of consensus about direction and mission; and
- Problems with scheduling and space constraints.

Other criticisms have been made of small schools, including their potential to be used as a mechanism and rationale for tracking (Fine; Oxley [as cited in Raywid, 1995]).

Large comprehensive high schools are often able to offer students more curricular choices and work-based learning experiences and can achieve economies of scale that are out of the reach of small schools (Lee & Smith, 1995; Visher, Lauen, Merola, & Medrich, in press). For example, Visher et al. finds that larger schools tend to offer more school-to-work activities than small schools, after controlling for a wide range of factors.

Summary

Investigations of the effects of school size on a range of outcomes have one of the longest and best-established traditions in the field of education research. Researchers and educators have studied this issue extensively, using data ranging from large nationally representative surveys to small qualitative case studies of schools of varying sizes. Rigorous statistical analysis has been applied in attempting to isolate the effect of school size from other variables, such as the socioeconomic and demographic makeup of students, schools' access to resources, and a variety of other exogenous variables. While some studies have voiced conclusions to the contrary, the majority has found that size matters for outcomes such as academic achievement, graduation and dropout rates, and successful school-to-work transitions. With a few exceptions, most studies have shown that small learning environments lead to improved outcomes.

It is important to note, however, that in many studies researchers have argued that the effect of school size on student outcomes is primarily indirect. That is, small schools are more likely to create and sustain conditions that are conducive to improving student outcomes, such as a cohesive teacher community, a positive culture, and strong relationships between teachers and students. Thus, smaller learning environments in and of themselves are usually not sufficient to have a significant impact on student outcomes.

References

Coalition of Essential Schools. (1995a, January). A big school divides to go for high-quality work. *Performance, 17.*

Coalition of Essential Schools. (1995b, April). A big school takes the team approach. *Performance, 20.*

Crain, R.L., Allen, A., Thaler, R., Zellman, G.L., Quigley, D.D., Stone III, J.F., Bremer, C., Sullivan, D., & Little, J.W. (1997). *The effects of magnet education on high schools and their graduates.* Berkeley, CA: National Center on Research in Vocational Education.

Hallinan, M. (Ed.). (1994). *Restructuring schools: Promising practices and policies.* New York: Plenum Press.

Hill, P.T., Foster, G.E., & Gendler, T. (1990). *High schools with character.* Santa Monica, CA: The RAND Corporation.

Klonsky, M. (1995). *Small schools: The numbers tell a story. A review of the research and current experiences.* Chicago: Illinois University.

Lee, V.E., Bryk, A.S., & Smith, J.B. (1993). The organization of effective secondary schools. *Review of Research in Education, 19,* 171–267.

Lee, V.E., & Smith, J.B. (1995, October). Effects of high school restructuring and size on early gains in achievement and engagement. *Sociology of Education, 68,* 241–270.

Meier, D. (1995a). *The power of their ideas: Lessons for America from a small school in Harlem.* Boston: Beacon Press.

Meier, D. (1995b, July). Small schools, big results. *American School Board Journal, 182*(7), 37–40.

Newmann, F. (1995). *Successful school restructuring.* Madison, WI: Center for the Organization and Restructuring of Schools.

Raywid, M. (1995). *The subschools/small schools movement—taking stock.* Madison, WI: Center on Organization and Restructuring of Schools.

Visher, M., Lauen, D., Merola, L., & Medrich, E. [in press]. *School-to-work in the 1990s: A look at programs and practices in American high schools.* Washington, DC: U.S. Department of Education.

Suggested Reading

Bottoms, G., & Creech, B. (1997). *Reading performance of career bound students: Good news for the 1996 High Schools That Work assessment.* Atlanta, GA: Southern Regional Education Board.

Bottoms, G., Creech, B., & Johnson, M. (1997, June). Academic and vocational teachers working together contribute to higher levels of student achievement. *High Schools That Work Research Brief, 9,* 1–8.

Bottoms, G., & Mikos, P. (1996). *Seven most-improved High Schools That Work sites raise achievement in reading, mathematics, and science.* Atlanta, GA: Southern Regional Education Board.

Bragg, D. (1994). *Tech prep implementation in the United States: Promising trends and lingering challenges.* Berkeley, CA: National Center for Research in Vocational Education.

Bragg, D., Kirby, C., Puckett, P., Trinkle, K., & Watkins, L. (1994). *Building a preferred future with tech prep systems.* Berkeley, CA: National Center for Research in Vocational Education.

Bucci, P. (1995). *PACE Model Tech Prep Education Project: Evaluation report.* Washington, DC: Academy for Educational Development.

Colorado State Department of Education. (1995). *High expectations, high achievements: State report card 1995. K–12 public education in Colorado.* Denver, CO: Author.

Crain, R.L., Heebner, A.L., Si, Y.-P., Jordan, W.J., & Kiefer, D.R. (1992). *The effectiveness of New York City's career magnet schools: An evaluation of ninth grade performance using an experimental design.* Berkeley, CA: National Center for Research in Vocational Education.

Decision Information Resources. (1995). *Evaluation of tech prep system development and implementation in Texas public schools and institutions of higher education.* Houston, TX: Author.

Foothill Associates. (1997). *California partnership academies 1995–1996 evaluation report.* Nevada City, CA: Author.

Hershey, A., Hudis, P., Silverberg, M., & Haimson, J. (1997). *Partners in progress: Early steps in creating school-to-work systems.* Princeton, NJ: Mathematica Policy Research, Inc.

Kemple, J. (1997). *Career academies: Communities of support for students and teachers: Emerging findings from a 10-site evaluation.* New York: Manpower Demonstration Research Corporation.

Kemple, J., & Rock, J. (1996). *Career academies: Early implementation lessons from a 10-site evaluation.* New York: Manpower Demonstration Research Corporation.

Nielsen-Andrew, E., & Grubb, N. (1992). *Making high schools work: Patterns of school reform and the integration of vocational and academic education.* Berkeley, CA: National Center for Research in Vocational Education.

Owens, T. (1995). *Washington Year Two Tech Prep Planning and Implementation Survey summary.* Portland, OR: Northwest Regional Educational Lab.

Pauly, E., Kopp, H., & Haimson, J. (1995). *Home-grown lessons: Innovative programs linking school and work.* New York: Manpower Demonstration Research Corporation.

Pedraza, R. (1997). *Home-grown progress.* New York: Manpower Demonstration Research Corporation.

Pelavin, S., & Kane, M. (1990). *Changing the odds: Factors increasing access to college.* New York: The College Board.

Perry, N. (1993, November 29). School reform: Big pain, little gain. *Fortune,* pp. 130–138.

Rahn, M.L., Alt, M.N., Emanuel, D., Ramer, C.G., Hoachlander, E.G., Holmes, P., Jackson, M., Klein, S.G., & Rossi, K. (1995). *Getting to work: A guide for better schools.* Berkeley, CA: National Center for Research in Vocational Education.

Stern, D., Dayton, C., Paik, I., & Weisberg, A. (1989, Winter). Benefits and costs of dropout prevention in a high school program combining academic and vocational education: Third-year results from replications of the California partnership academies. *Educational Evaluation and Policy Analysis, 11*(4), 405–416.

Stern, D., Raby, M., & Dayton, C. (1992). *Career academies: Partnerships for recontructing American high schools.* San Francisco, CA: Jossey-Bass.

STRUCTURE LEARNING AROUND CAREERS AND STUDENTS' INTERESTS

Introduction

High schools in the United States have traditionally served the dual purpose of preparing some students for admission to four-year colleges and others for entry-level jobs. Over the last decade, however, the educational community has become increasingly alarmed by reports that many schools are failing in both of these missions. Studies show that college-bound students often are ill-prepared for postsecondary education and lack direction in their choice of majors once they enter four-year colleges or universities (Stasz, Kaganoff, & Eden, 1994). According to these studies, non-college-bound students leave high school with weak academic skills, poor awareness of career options and requirements, and little training that will help them succeed in a changing job market. Many view career-oriented education as a promising new strategy to address the problems in traditional high schools by providing instruction that directly relates to students' lives outside of school, particularly their work experiences. During recent years, several models have emerged, all of which organize vocational and academic curriculum, as well as work-based experiences, around specific career areas or industries. High schools that use these models assign students and faculty to participate in one career cluster (when there is more than one), usually based on interests and experience. Courses and, to varying degrees, course content are linked to industries or occupational clusters. Frequently, career-oriented education includes integrated curriculum across academic disciplines, across vocational and academic subjects, and between the classroom and work. Through this approach, proponents hope to avoid both the narrow focus of vocational programs and the purely academic instruction provided in college-prep high schools.

Career academies, which were first established in California and Florida in the 1970s and 1980s, have spread steadily throughout the nation's high schools. According to a recent survey, one out of five public high schools reported that they offer career majors (Visher, Lauen, Merola, & Medrich, in press). Education with a career focus comes in many shapes and sizes—ranging from whole school academies, such as the New School of Fashion in New York City and the Chicago High School for the Agricultural Sciences, to seven or more academies within one large high school, such as the William Turner

Technical High School in Miami and Encina High School in Sacramento. Some academies are pure, where students take all of their courses together in one academy, while others share students, faculty, or both. Some academies prepare students for specific occupations, while others introduce students to whole industries. Thus, career-focused schools typically offer a range of school- or work-based experiences that are designed to enhance students' career awareness and strengthen the link between classroom learning and careers.

This section examines

- The extent to which efforts to organize schools around careers have led to improved student outcomes; and
- Aspects of these efforts that have been shown to be most effective in improving student performance.

As with the other reform strategies discussed in this review, evaluating the effects of career-focused schools on student outcomes presents some methodological challenges. Because schools often introduce many improvement practices simultaneously in whole-school reform, it is almost impossible to isolate the impact of a particular strategy on student outcomes.[8] For example, if graduation rates increase in a school that is both career-focused, dedicated to supporting and training teachers in new instructional practices, and providing students with a range of work-related experiences, which of these strategies should receive the "credit" if the graduation rate goes up?

Career-Focused Learning and Student Outcomes

Career academies are among the oldest, and most carefully documented, approaches to career-focused education. Evaluations up to 1992 are summarized in Dayton, Raby, Stern, and Weisberg (1992). More recent contributions include Linnehan (1996); McPartland, Legters, Jordan, and McDill (1996); Kemple and Rock (1996); and Kemple (1997). Dayton, Raby, Stern, and Weisberg conducted the most important studies of career academies in the late 1980s and early 1990s. In a comprehensive study of career academies in California, Dayton et al. (1992) found that schools that had introduced academy programs generally improved their attendance rate, increased the number of credits earned, improved their overall grade point average (GPA), reduced the number of courses failed, and lowered their dropout rate. A later study corroborated these findings.

---

[8] Only an invasive experimental design, with random assignment of students to treatment and control groups, has the potential of yielding accurate net impacts of various reform strategies. This approach is problematic in public high schools for a number of reasons.

In this study, the 1995–96 State of California evaluation of academies (Foothill Associates, 1997), the researchers compared the performance of 9th graders before they entered the academies with their performance when they were seniors. A number of positive outcomes were observed:

- The percentage of students attending 90 percent of their classes rose from 65 percent to 82 percent.
- The percentage of students earning enough credits to make normal progress toward graduation rose from 57 percent to 97 percent.
- The percentage of students with a GPA under 2.0 dropped from 42 percent to 22 percent.
- Students in career academies dropped out of high school at a rate (3.1 percent) that was lower than the rate at comprehensive high schools (3.9 percent).
- The most substantial jump in performance occurred between the 9th and 10th grades, when students entered the program and felt its initial effects. While students' improvement rates were smaller between the 11th and 12th grades, there continued to be a clear upward trend throughout the four years.

A national study of ten career academies conducted by Manpower Demonstration Research Corporation measured the effect of career academies on enrollment and retention (Kemple & Rock, 1996). According to this study, a large majority of students who were selected to participate in the career academies actually enrolled in them (84 percent), and three-quarters of those who enrolled were still participating two years later. The authors of the study stated that these rates of enrollment and retention should be viewed as "substantial" given the high rate of transfers among similar nonacademy students.

In addition to enhancing enrollment, retention, and completion rates, the evidence suggests that career academies positively influence school climate and motivation. Students in career academies were significantly less likely to cut class, drink, or become teenage parents, and were significantly more likely to be clear about their career plans than students in a comparison group attending traditional high schools (Crain et al., 1997).

Features That Lead to Success

If career academies tend to have positive impacts on student outcomes ranging from retention to academic achievement to satisfaction with school, what are the practices of career academies that can account for this? Although the Crain et al. study (1997) of career magnet schools in New York City suffers from some methodological problems and focuses only on student perceptions of what works, it begins to shed some light on what makes career academies so effective.[9]

A number of research studies have explored what career academies are doing to improve student outcomes. These studies have identified four practices that are key to these schools' effectiveness in raising students' performance:

Establishing a close community. The Crain et al. study (1997) found that several characteristics of career magnet schools—that students take a minimum number of credits in a chosen occupational field, participate in work-based learning experiences, and travel from class to class as part of a defined student cohort—contributed to a "community of practice" that motivated students, reduced discipline problems, and helped students focus on their future. In a similar vein, researchers conducted in-depth interviews with a small number of students at career magnet schools to further probe this dynamic (Crain et al., 1997). These interviews revealed that students who reported having a positive experience in career magnet schools attributed it to the strong sequencing of classes and the importance of belonging to a highly defined cohort in these schools.

Developing sustained, caring relationships between students and adults. In one study, researchers compared the responses of students who had positive experiences in career magnet schools with the responses of those whose experiences were negative (Crain et al., 1997). The findings indicated that another factor associated with a good experience was the "constellation of support" that students received from their teachers, guidance counselors, workplace mentors, and other adults affiliated with the program. As the students reported, they appreciated receiving support and encouragement in all aspects of their lives, especially related to their academic performance and personal lives. Students who had a poor experience in career magnet schools, on the other hand, reported having received less support from their teachers and other adults.

The importance of social support from adults and its effect on student performance was also the focus of another study of career academies (Kemple, 1997). This study found that academy students were more likely than their counterparts in traditional schools to report that their teachers gave them personalized attention and had high expectations of them. The researchers concluded that the school-within-a-school structure of California's career academies model offers students more support from teachers and peers than that available to similar students in traditional high schools.

---

[9] These studies were based on a very small set of in-depth interviews with graduates of career magnet programs and graduates of several comprehensive high schools. No statistical testing was done. The Kemple study (1997) was based on ten career academies where 1,100 academy students and 900 nonacademy students were enrolled. In this study, statistical testing of differences was reported.

Along these lines, research has shown that attending career magnet schools also appears to increase students' self-esteem. In comparing the responses of career magnet students with those of students in comprehensive high schools, researchers noted that students in career magnet schools were more likely to feel a stronger sense of accomplishment (Crain et al., 1997).

Promoting learning of occupational skills and knowledge in real-world settings. The Crain et al. study (1997) found that graduates of occupationally focused programs were better able to articulate the connections between what they were learning in school and what they might be doing in the workplace. The researchers hypothesized that this awareness contributed to the higher motivation observed in career magnet school students than in graduates of other high schools.

Using problem-solving activities and project-based instruction. As reported in the study of career magnet schools, hands-on activities and the use of projects helped students gain a better understanding of how their school experience was connected to their careers (Crain et al., 1997). Students who reported that their experience with career magnet schools was a positive one were exposed to more hands-on learning than students who were less satisfied with their educational experience. Similarly, these researchers found that students thrived in classrooms where teachers designed problem-solving activities and allowed them to use their creativity and imaginations.

Summary

Schools where most or the entire curriculum is organized around one or more careers or occupations with an integrated academic component are a relatively new phenomenon. A substantial and methodologically sound body of literature that reports research on this model has grown rapidly in recent years, however. Generally, these studies demonstrate that career academies and career magnet schools are associated with positive student outcomes, such as lowering dropout rates, raising postsecondary wages, increasing the number of college credits earned during high school, and raising career awareness. Nevertheless, many of the studies of career academies and career magnet schools could not isolate the impact of the career-focused curricula on outcomes from that of other reform practices going on concurrently in the schools. This is particularly true for the effect of school size because most career academies are relatively small.

While some of the studies of these schools attempted to assess outcomes using a comparison group, many of them did not.

Nonetheless, most of the research on career-focused education—specifically career academies—is very encouraging. Organizing students into programs with a career focus, however, does not *automatically* guarantee improved student confidence, motivation, or success. Programs need to have certain key features, such as defined cohorts, carefully planned sequences of courses, and ample individualized attention in order to get students to perform their best. Career clusters neither should be so narrow that they end up teaching obsolete skills or training students for employment in declining industries nor should they close doors or create obstacles for students who want to change the direction of their studies. Students and teachers must be genuinely interested in the career areas, and the academic curriculum must be comprehensive and rigorous, providing depth as well as focus. Finally, as for any of the strategies discussed in this review, schools considering career-focused programs as a strategy need to pay close attention to their specific instructional environments when choosing or designing the approach that will be most beneficial to students.

References

Crain, R.L., Allen, A., Thaler, R., Zellman, G.L., Quigley, D.D., Stone III, J.F., Bremer, C., Sullivan, D., & Little, J.W. (1997). *The effects of magnet education on high schools and their graduates*. Berkeley, CA: National Center on Research in Vocational Education.

Dayton, C., Raby, M., Stern, D., & Weisberg, A. (1992, March). The California partnership academies: Remembering the "forgotten half." *Phi Delta Kappan, 73*(7), 539.

Foothill Associates. (1997). *California partnership academies 1995–1996 evaluation report.* Nevada City, CA: Author.

Kemple, J. (1997). *Career academies: Communities of support for students and teachers: Emerging findings from a 10-site evaluation.* New York: Manpower Demonstration Research Corporation.

Kemple, J., & Rock, J. (1996). *Career academies: Early implementation lessons from a 10-site evaluation.* New York: Manpower Demonstration Research Corporation.

Kemple, J. (1997). *Career academies: Communities of support for students and teachers: Emerging findings from a 10-site evaluation.* New York: Manpower Demonstration Research Corporation.

Linnehan, F. (1996, Spring). Measuring the effectiveness of a career academy program from an employer's perspective. *Educational Evaluation and Policy Analysis, 18*(1), 73–89.

McPartland, J.M., Legters, N., Jordan, W., & McDill, E.L. (1996). *The talent development high school: Early evidence of impact on school climate, attendance, and student promotion.* Baltimore, MD: Center for Research on the Education of Students Placed at Risk, Johns Hopkins University and Howard University.

Stasz, C., Kaganoff, T., & Eden, R.A. (1994). Integrating academic and vocational education: A review of the literature, 1987–1992. *The Journal of Vocational Education Research, 19*(2), 25–72.

Visher, M., Lauen, D., Merola, L., & Medrich, E. [in press]. *School-to-work in the 1990s: A look at programs and practices in American high schools.* Washington, DC: U.S. Department of Education.

Suggested Reading

Bottoms, G., & Creech, B. (1997). *Reading performance of career bound students: Good news for the 1996 High Schools That Work assessment.* Atlanta, GA: Southern Regional Education Board.

Bottoms, G., Creech, B., & Johnson, M. (1997, June). Academic and vocational teachers working together contribute to higher levels of student achievement. *High Schools That Work Research Brief, 9,* 1–8.

Bottoms, G., & Mikos, P. (1996). *Seven most-improved High Schools That Work sites raise achievement in reading, mathematics, and science.* Atlanta, GA: Southern Regional Education Board.

Bragg, D. (1994). *Tech prep implementation in the United States: Promising trends and lingering challenges.* Berkeley, CA: National Center for Research in Vocational Education.

Bucci, P. (1995). *PACE Model Tech Prep Education Project: Evaluation report.* Washington, DC: Academy for Educational Development.

Clark, R.M. (1990, Spring). Why disadvantaged students succeed. *Public Welfare, 48*(2), 17–23.

Colorado State Department of Education. (1995). *High expectations, high achievements: State report card 1995. K–12 public education in Colorado.* Denver, CO: Author.

Crain, R.L., Heebner, A.L., Si, Y.-P., Jordan, W.J., & Kiefer, D.R. (1992). *The effectiveness of New York City's career magnet schools: An evaluation of ninth grade performance using an experimental design*. Berkeley, CA: National Center for Research in Vocational Education.

Cunanan, E.S., & Maddy-Bernstein, C. (1997). *Exemplary career guidance programs 1995: Secondary and postsecondary*. Berkeley, CA: National Center for Research in Vocational Education.

Hershey, A., Hudis, P., Silverberg, M., & Haimson, J. (1997). *Partners in progress: Early steps in creating school-to-work systems*. Princeton, NJ: Mathematica Policy Research, Inc.

Louis Harris and Associates. (1993). *Metropolitan Life Survey of the American Teacher 1993*. New York: Author.

Pauly, E., Kopp, H., & Haimson, J. (1995). *Home-grown lessons: Innovative programs linking school and work*. New York: Manpower Demonstration Research Corporation.

Pedraza, R. (1997). *Home-grown progress*. New York: Manpower Demonstration Research Corporation.

Perry, N. (1993, November 29). School reform: Big pain, little gain. *Fortune*, pp. 130–138.

Rahn, M.L., Alt, M.N., Emanuel, D., Ramer, C.G., Hoachlander, E.G., Holmes, P., Jackson, M., Klein, S.G., & Rossi, K. (1995). *Getting to work: A guide for better schools*. Berkeley, CA: National Center for Research in Vocational Education.

Silverberg, M. (1995). *The emergence of tech-prep at the state and local levels*. Princeton, NJ: Mathematica Policy Research, Inc.

Silverberg, M. (1996a). *Building school-to-work systems on a tech-prep foundation*. Princeton, NJ: Mathematica Policy Research, Inc.

Silverberg, M. (1996b). *The continuing development of local tech-prep initiatives*. Princeton, NJ: Mathematica Policy Research, Inc.

Stern, D. (1997, November). The continuing promise of work-based learning. *Centerfocus, 18*, 1–6. Berkeley, CA: National Center for Research in Vocational Education.

Stern, D., Dayton, C., Paik, I., & Weisberg, A. (1989, Winter). Benefits and costs of dropout prevention in a high school program combining academic and vocational education: Third-year results from replications of the California partnership academies. *Educational Evaluation and Policy Analysis, 11*(4), 405–416.

Stern, D., Raby, M., & Dayton, C. (1992). *Career academies: Partnerships for recontructing American high schools.* San Francisco, CA: Jossey-Bass.

Stone, J. (1995). Cooperative vocational education in the urban school: Towards a systems approach. *Education and Urban Society, 27*(3), 328–352.

PROMOTE STUDENT ACHIEVEMENT BY ENHANCING EDUCATORS' PROFESSIONAL DEVELOPMENT

Introduction

The professional development of teachers has become a primary focus of recent educational reform efforts. Although important changes are being made in what and how students are taught in high schools across the country, the education community has begun to recognize that even when teachers *want* to participate fully in these reforms, they cannot always successfully do so without adequate training. While pressure steadily increases on schools to produce students who perform better academically, teachers are increasingly "under the gun" as the primary deliverers of education (Cohen, 1996).

Furthermore, teachers need more than simply greater exposure to traditional professional development activities. Educators agree that the traditional approach to professional development no longer seems adequate to the task of keeping teachers informed and up-to-date on the rapid changes taking place in secondary education. Professional development has historically entailed having teachers attend periodic workshops and lectures, and, for a few, going to occasional conferences (Corcoran, 1995; Little, 1989, 1993). The literature is rich with evidence that this approach is probably inadequate for traditional teaching, and certainly inadequate for teaching in reform settings (Guskey & Huberman, 1995). In this section, research findings are organized into the following topics:

- The traditional professional development model;
- Features of more effective professional development; and
- Two new ways to deliver professional development.

Traditional Professional Development Model

Much of the literature on professional development focuses on the many weaknesses of traditional professional development activities. A number of studies have reported that professional development activities tend to have the following characteristics:

- Reward teachers for planning coursework that is often unrelated to their concerns and needs (Lewis, 1997);
- Fail to stimulate teachers' intellectual and teaching capacities (Miller, 1995; Lewis, 1997; Little, 1993);
- Lack focus, intensity, and follow-up (Corcoran, 1995);
- Reinforce passive learning (Sparks, 1995); and
- Disjointed and lack teacher input (Abdal-Haqq, 1995).

In addition, Hargreaves (1995) noted that teachers resist traditional skill- and knowledge-based training when it is imposed by outsiders, encountered in an environment where there are many innovations being introduced at once, and when they have been excluded from determining what they need and how best to meet those needs.

Features of More Effective Professional Development

Little (1993) noted that high school reforms, such as efforts to integrate vocational and academic curriculum, require that teachers move well beyond their customary role of "classroom technician" and learn to "investigate, experiment, consult, or evaluate." Furthermore, Miller (1995) and Corcoran (1995) pointed out that teachers in some high schools are expected to implement an ambitious set of reforms—including teaching to higher standards for all students, eliminating tracking, tailoring lessons to meet students' individual needs, and designing multidisciplinary and multicultural curricula. Sparks (1995) and Bellanca (1995) stressed that the increased adoption of "constructivist" teaching approaches—in which teachers help students learn by guiding student activities instead of telling and directing—requires that professional development be restructured along the same lines.

Rather than lectures and workshops, many believe that effective professional development should entail *teacher-based, intensive, goal-driven training that is ongoing and closely connected to district or school objectives and daily classroom activity* (Little, 1993; Massel, Kirst, & Hoppe, 1997).

Successful professional development cannot occur if teachers work in an environment that *lacks resources and support* from within the school staff. Studies have shown that schools must simultaneously focus on both individual and organizational development for teachers to absorb and use what they learn in training activities (Fullan, 1995; Bellanca, 1995; Sparks, 1995; Guskey, 1995). Teachers, however, are reluctant to adopt new practices unless they feel confident that their work environment supports these innovations. For example, training teachers to hold higher expectations for all students when the school tracks students "pits teachers against the system in which they work" (Sparks, 1995). Similarly, if time schedules, curricular goals, student and teacher evaluations, materials, and expectations follow the status quo, one can expect little significant change in the classroom (Bellanca, 1995). An inflexible, tradition-bound environment can effectively suffocate any effort to bring about new teaching practices, even when teachers are exposed to the best of professional development (Guskey & Huberman, 1995).

One study, which used the Schools and Staffing Survey, a nationally representative sample of high schools, provided evidence that the most common types of support for professional development were release time from teaching (47 percent) and building time for professional development into teachers' schedules (40 percent) (Choy & Chen, 1998). According to this study, while about one-quarter of all teachers had been reimbursed for travel expenses, one-quarter of teachers had not received any such support.

Support for professional development comes from peers as well. Several studies have examined how *support networks or communities of teachers promote individual professional development* (Smylie, 1995; Fullan, 1995; Hawley & Valli [as cited in Lewis, 1997]; Guskey & Huberman, 1995; Newmann, 1995). In a comprehensive study of five schools over three years, McLaughlin reported that effective teachers were part of a "professional community," which gave members the opportunity to reflect, learn new ideas, and enjoy mutual support. Similarly, Fullan cited research on elementary schools indicating that schools that made the most progress in boosting student achievement created environments where teachers learned from each other. In another study, Newmann also established a link between student achievement and teacher collaboration.

In studying reform efforts in three high schools, Little (1993, 1995) found that successful schools created support structures by teaming teachers and providing them with *common space and time*, which promoted collegiality and experimentation. Similarly, Meier (1995) noted that teacher collaboration is predicated on giving teachers time to interact and provide each other with support and feedback. However, some researchers have concluded that teamwork must be linked to established norms of continuous improvement and experimentation (Guskey, 1995; Little, 1995).

The Schools and Staffing Survey also sheds light on the extent to which teachers get support from their colleagues and feel that they belong to a professional community. In a study that examined the teachers' perceptions of their community, Choy and Chen (1998, p. vi) reported that "11 percent of all teachers strongly agreed that their principal talked with them frequently about instructional practices; 37 percent strongly agreed that there was a great deal of cooperative effort among the staff members; and 39 percent strongly agreed that they made a conscious effort to coordinate their courses with other teachers."

Educators believe that one key to successful professional development is to insist that it be *school-based, rather than district- or state-based* (Corcoran, 1995; Sparks, 1995; Smylie, 1995; Hawley & Valli [as cited in Lewis, 1997]). In particular, they contend that teachers and local administrators need more autonomy to set their own goals and design their own professional development activities. Sparks noted that school improvement efforts in which the entire staff seeks incremental annual improvement related to a set of common objectives over a three- to five-year span are essential to effective reform. This system shifts the district's role from one of designing and directing professional development to one of providing technical assistance and support to schools to do their own professional development. While previously the content of most professional development activities was determined by the district or the state, recent research has shown that, according to teachers and principals themselves, most of the responsibility for designing in-service professional development activities is now in their hands (Choy & Chen, 1998).

Effective professional development, according to one line of research, *is continuous and closely monitored* (Hawley & Valli [as cited in Lewis, 1995]; Guskey & Huberman, 1995; Smylie, 1995; Corcoran, 1995; Sparks, 1995). Researchers have increasingly stressed the need for sustained and continuous professional development. For example, Guskey & Huberman noted that few persons can apply what they have learned in a professional development activity, especially in the current context of reform, without ongoing assistance. Teachers working in schools with a school-to-work emphasis are especially in need of continuous follow-up activities (Borko & Putnam, 1995).

Research on the importance of teacher professional development and the need for change has led the federal government and local communities to take steps to improve its quality. In one such effort, the U.S. Department of Education (1996) published a list of criteria to stimulate more effective professional development in which it states that high-quality professional development has the following features:

- Focuses on teachers as central to student learning, yet includes all other members of the school;
- Focuses on individual, collegial, and organizational improvement;

- Respects and nurtures the intellectual and leadership capacity of teachers, principals, and others in the community;
- Reflects the best available research and practice in teaching, learning, and leadership;
- Enables teachers to develop further expertise in subject content, teaching strategies, and uses of technologies and other essential elements in teaching to high standards;
- Promotes continuous inquiry and improvement embedded in the daily life of schools;
- Is planned collaboratively by those who will participate in and facilitate that development;
- Requires substantial time and other resources;
- Is driven by a coherent long-term plan: and
- Is evaluated ultimately on the basis of its impact on teacher effectiveness and student learning, and this assessment guides subsequent professional development efforts.

Two New Ways to Deliver Professional Development

The National Board for Professional Teaching Standards (NBPTS) is also taking the lead in setting guidelines for quality activities, and in developing methods for assessing and certifying participation in them. Currently, two types of organizations—teacher networks and professional development schools—are delivering professional development in new ways.

Teacher Networks

There is growing evidence that organized networks, coalitions, and partnerships for teachers in districts, states, or even regions can significantly enrich professional development that occurs within the school. In a study of the effects of two teacher networks in California and Vermont, Pennell and Firestone (1996) found that these programs were effective in helping teachers incorporate practices that engage students more in active learning. They further observed that these effects were more evident among relatively young, inexperienced teachers who may have been less entrenched in their ways.

Lieberman and Grolnick (1996) studied teachers' experiences in 16 different networks, ranging from the Foxfire Teacher Outreach Network to the South Maine Partnership, and found that these alliances fostered development and supported teachers in many of the following ways:

- Teachers are given opportunities to label and share the knowledge that they have developed through their work;
- Networks are attempting to shift the meaning of adult learning away from prescription toward involvement and problem solving;
- Networks offer numerous opportunities for members to take leadership roles;
- Networks provide examples of collaboration among their members; and
- When networks last long enough to create ongoing learning communities, cultures based on mutual knowledge, learning, and collaboration replace the transmission of knowledge from one institution to another.

Professional Development Schools

Professional Development Schools (PDS) are schools in which university faculty collaborate with teachers over a relatively long period of time (Fullan, 1995). Currently, there are approximately 300 such schools/partnerships nationwide (Abdal-Haqq, 1995). PDS proponents have argued that such schools provide appropriate clinical settings for giving practical experience to pre-service teachers and for effective in-service teacher development. Fullan noted that the concept of PDS remains ambitious and that there is little evidence available showing that these schools are effective in changing teaching practices.

Inherent in many of the reforms going on in U.S. high schools today, including new approaches to teacher professional development is the idea that changes should be result-oriented. In other words, if the quality of professional development is to be improved, the results of the improvement should be measurable. Proponents of reform believe that teaching practices in the classroom should change, and ultimately, student outcomes such as engagement and academic achievement should also reflect improved professional development. Many states are beginning to hold schools and districts accountable for funded professional development activities (Corcoran, 1995).

Summary

In response to intensifying secondary school reform activity, the field of professional development for teachers is changing rapidly. There is growing agreement among observers and educators that the traditional model for training teachers and upgrading their skills no longer fits the needs of most teachers, especially those who are teaching in reforming schools. New models of professional development are becoming increasingly popular. Key features of these new approaches include

- Teacher involvement in setting objectives;
- Assessing actual teachers' needs and designing development activities that meet those needs;
- Tailoring these activities to match the local teaching environment; and
- Building in continuous, ongoing support.

Despite the growing popularity of these new approaches to professional development, very few studies have attempted to document systematically the range of approaches being tried or how they are influencing teachers' practices and behavior in the classroom.

References

Abdal-Haqq, I. (1995, Winter). Professional development schools: Their role in teacher development. *ERIC Review, 3*(3), 16–17.

Bellanca, J. (1995). *Designing professional development for change: A systematic approach.* Arlington Heights, IL: IRI/Skylight Training and Publishing.

Borko, H., & Putnam, R. (1995). Expanding a teacher's knowledge base: A cognitive psychological perspective on professional development. In T. Guskey & M. Huberman (Eds.), *Professional development in education: New paradigms and practices.* New York: Teachers College Press.

Choy, S., & Chen, X. (1998). *Toward better teaching: Professional development in 1993–94* (NCES 98-230). Washington, DC: U.S. Department of Education, National Center for Education Statistics.

Cohen, D.K. (1996). Standards-based school reform: Policy, practice and performance. In H.F. Ladd (Ed.), *Holding schools accountable: Performance-based reform in education* (pp. 99–127). Washington, DC: The Brookings Institute.

Corcoran, T. (1995). *Helping teachers teach well: Transforming professional development* (CPRE Policy Briefs). New Brunswick, NJ: Consortium for Policy Research in Education.

Fullan, M. (1995). The limits and potential of professional development. In T. Guskey & M. Huberman (Eds.), *Professional development in education: New paradigms and practices*. New York: Teachers College Press.

Guskey, T. (1995). Professional development in education: In search of the optimal mix. In T. Guskey & M. Huberman (Eds.), *Professional development in education: New paradigms and practices*. New York: Teachers College Press.

Guskey, T., & Huberman, M. (Eds.). (1995). *Professional development in education: New paradigms and practices*. New York: Teachers College Press.

Hargreaves, A. (1995). Development and desire: A postmodern perspective. In T. Guskey & M. Huberman (Eds.), *Professional development in education: New paradigms and practices*. New York: Teachers College Press.

Lewis, A. (1997, May/June). A new consensus emerges on the characteristics of good professional development. *Harvard Education Letter, 13*(3).

Lieberman, A., & Grolnick, M. (1996, Fall). Networks and reform in American education. *Teachers College Record, 98*(1), 7–45.

Little, J.W. (1989, Summer). District policy choices and teachers' professional development opportunities. *Educational Evaluation and Policy Analysis, 11*(2), 165–179.

Little, J.W. (1993, Summer). Teachers' professional development in a climate of educational reform. *Educational Evaluation and Policy Analysis, 15*(2), 129–152.

Little, J.W. (1995, May). What teachers learn in high school: Professional development and the redesign of vocational education. *Education and Urban Society, 27*(3), 274–293.

Massel, D., Kirst, M., & Hoppe, M. (1997). *Persistence and change: Standards-based reform in nine states* (CPRE Research Reports Series #37). New Brunswick, NJ: Consortium for Policy Research in Education.

Meier, D. (1995). *The power of their ideas: Lessons for America from a small school in Harlem*. Boston: Beacon Press.

Miller, E. (1995, January/February). The old model of professional development survives in a world where everything else has changed. *Harvard Education Letter, 11*(1).

Newmann, F. (1995). *Successful school restructuring*. Madison, WI: Center for the Organization and Restructuring of Schools.

Pennell, J., & Firestone, W.A. (1996, Fall). Changing classroom practices through teacher networks: Matching program features with teacher characteristics and circumstances. *Teachers College Record, 98*(1), 46–76.

Smylie, M. (1995). Teacher learning in the workplace: Implications for school reform. In T. Guskey & M. Huberman (Eds.), *Professional development in education: New paradigms and practices.* New York: Teachers College Press.

Sparks, D. (1995, Winter). A paradigm shift in professional development. *ERIC Review, 3*(3), 2–4.

U.S. Department of Education. (1996). *Building bridges: The mission and principles of professional development* [pamphlet]. Washington, DC: Author.

Suggested Reading

Bottoms, G., & Creech, B. (1997). *Reading performance of career bound students: Good news for the 1996 High Schools That Work assessment.* Atlanta, GA: Southern Regional Education Board.

Bottoms, G., Creech, B., & Johnson, M. (1997, June). Academic and vocational teachers working together contribute to higher levels of student achievement. *High Schools That Work Research Brief, 9,* 1–8.

Bottoms, G., & Mikos, P. (1996). *Seven most-improved High Schools That Work sites raise achievement in reading, mathematics, and science.* Atlanta, GA: Southern Regional Education Board.

Bucci, P. (1995). *PACE Model Tech Prep Education Project: Evaluation report.* Washington, DC: Academy for Educational Development.

Check, J. (1997, May/June). Teacher research as powerful professional development. *Harvard Education Letter, 13*(3).

Corcoran, T. (1995). *Transforming professional development for teachers: A guide for state policymakers.* Washington, DC: National Governors' Association.

Darling-Hammond, L., Ancess, J., & Falk, B. (1995). *Authentic assessment in action: Studies of schools and students at work* (Series on school reform). New York: Teachers College Press.

Darling Hammond, L., & McLaughlin, M.W. (1995). Policies that support professional development in an era of reform. *Phi Delta Kappan, 76*(8), 597–604.

Lewis, A. (1997, May/June). A new consensus emerges on the characteristics of good professional development. *Harvard Education Letter, 13*(3).

Meier, D. (1995, July). Small schools, big results. *American School Board Journal, 182*(7), 37–40.

Pauly, E., Kopp, H., & Haimson, J. (1995). *Home-grown lessons: Innovative programs linking school and work.* New York: Manpower Demonstration Research Corporation.

Rahn, M.L., Alt, M.N., Emanuel, D., Ramer, C.G., Hoachlander, E.G., Holmes, P., Jackson, M., Klein, S.G., & Rossi, K. (1995). *Getting to work: A guide for better schools.* Berkeley, CA: National Center for Research in Vocational Education.

LINK STUDENTS' OUT-OF-SCHOOL LEARNING EXPERIENCES TO CLASSROOM LEARNING

Introduction

One of the most crucial challenges facing high schools today is to prepare young people for a world where work is very different from the way it was in previous eras. The days of holding a single job for a lifetime are over. Workers now must master a wide range of technical, problem-solving and analytic skills, substantive knowledge, and leadership and teamwork skills. In response to these new demands, many high schools are attempting to clarify the connections between what students learn in the classroom and what they need to know in order to succeed in the workplace. By connecting classroom- and work-based learning experiences, educators hope to raise the achievement of all students, especially those who have more difficulty with abstract theoretical learning (Rahn et al., 1995).

To support these efforts, policymakers have set nationwide goals of strengthening and expanding programs that serve to bridge school and the world of work. Guided partly by lessons from European models of work-based learning, partnerships of schools and employers in local communities across the country are designing and operating school-to-work programs, ranging from structured learning experiences in the workplace to simulations of real-work scenarios at school. Passage of the School-to-Work Opportunities Act (STWOA) in 1994 stimulated these efforts by providing federal funding to all 50 states. Most states, districts, and high schools are now engaged (albeit in varying degrees) in implementing a range of work- and school-based activities, such as internships in local businesses, cooperative education, youth apprenticeships, school-based enterprises, mentoring, job shadowing, field trips to businesses, career awareness fairs, and so on.

While the number and types of work-based learning experiences being practiced in U.S. high schools today are impressive, linking what students are learning to those settings with what they are learning in the classroom in meaningful ways is becoming a great challenge. Instructional approaches that go beyond relegating abstract knowledge to the classroom and direct hands-on experiences to worksites, and that attempt to connect the two, are still relatively rare. Even in schools that are deeply committed to school-to-work principles, teachers are still often divided into two groups that are unaccustomed to cooperating and communicating with each other (Stasz, Kaganoff, & Eden, 1994; Ramsey, Eden, Stasz, & Bodilly, 1995). The recent national evaluation of the STWOA reported that career-focused programs of study integrating academic and vocational curricula are still a relative rarity, and that creating them is usually a low priority even for schools formally committed to the goals of school-to-work (Hershey, Hudis, Silverberg, & Haimson, 1997). This development is unfortunate since the quality of work-based learning depends in large part on the degree to which clear links are made to classroom learning, including rigorous academic curriculum (Goldberger, Kazis, & O'Flanagan, 1994).

This section describes and assesses the research on several work-based learning models which build on the concept of combining work-based learning with classroom learning, including:

- Cooperative education;
- Youth apprenticeships;
- Internships;
- School-based enterprises; and
- Project-based learning.

Cooperative Education

The largest and oldest workplace learning program in the United States is cooperative education, now enrolling more than 600,000 students (or about 9 percent of all high school students) in secondary and postsecondary institutions (Barton, 1996). Cooperative (co-op) education, which exists mainly in vocational education, allows students to combine classroom activities with actual work experiences. Students usually enroll in school for half a day and are employed the other half. Typically, co-op students are on the job for longer periods than are students in other programs, such as internships, and are often hired by their employers after graduation. While co-op education often does a good job of integrating students' work experiences with their vocational classroom learning, it rarely links their experiences in the workplace to the academic curriculum.

Findings from research on the effects of co-op programs on employment outcomes and other indicators have generally been positive. As an example, Stern (1997) noted that co-op participants later enjoy higher earnings than nonparticipants, but this is probably due to the fact that the students tend to remain with their original employer after they have completed the co-op program. Co-op students who change employers do not earn significantly more than nonparticipants do. Stone (1995) cited four studies (Kerka; Shaughnessy; Mortimer; Steistz & Owens) that present evidence showing that co-op programs lead to higher self-esteem for participating students. Stone also found that co-op students are more likely than others to report that the main reason they work is to learn useful skills rather than to earn money or be with friends.

Youth Apprenticeships

Youth apprenticeships are paid employment in a job or series of jobs culminating in formal certification with closely related classroom instruction throughout. Most programs last between two and four years, and some span high school and college. These programs last longer than all other work-based learning experiences. Youth apprenticeships were introduced into the United States in the last decade and although growing in popularity, have yet to catch on in most high schools. One study estimated that only 4 percent of all high school students participated in youth apprenticeship programs (Visher, Lauen, Merola, & Medrich, in press).

Early evidence that youth apprenticeships can affect student outcomes is fairly persuasive. In a study of five youth apprenticeship programs in the printing industry, Orr (1995) found that students who had participated in two-year programs combining paid work experience with formal classroom instruction had improved employment, postsecondary, educational, and social outcomes. In particular, apprentices were more likely than their nonparticipating peers to have better jobs and concrete career plans, and a sizable proportion of these students continued their education in a technical college degree program. Employers and schools also reported benefits.

The Cornell Youth Apprenticeship Program (a multi-industry initiative in Broome County, New York) led to a number of positive outcomes including increased technical, personal, and social skills and increased career awareness (Hamilton & Hamilton, 1997).[10] However, the academic achievement of the participating students did not improve more than that of nonparticipants, as the program leaders had hoped (Bailey, 1995).

Graduates of ProTech, a youth apprenticeship program in Boston, showed increased awareness of job opportunities and a better understanding of the relationship between good skills and well-paying jobs (Kopp & Kazis, 1995). However, the evidence was inconclusive for the effects of participation on grades. The first two cohorts of ProTech students did not improve their grade point averages (GPAs) or attendance, and in fact experienced a slight decline in their GPAs. Evaluators of the program suggested that the lower GPAs may have been caused by the program's success in encouraging students to take more difficult mathematics and science courses than they otherwise might have.

---

[10] The program's directors reported that evidence of improvements in technical competence were based on observing students perform complex tasks at their worksites, interviews with workplace supervisors, and reviewing competency check list/evaluation forms completed by workplace supervisors.

Internships

Internships provide opportunities for high school students to obtain direct exposure to different careers in a structured paid or unpaid work setting. Internships typically last a few weeks, and access is often restricted to 11th or 12th graders. Some students rotate through several internships either during the summer or the school year.

Internships for high school students are slowly gaining in popularity, particularly since the passage of the STWOA. Approximately one out of five high schools now claim to offer internships. However, perhaps because there is a considerable amount of work involved in setting up internships and locating employers willing to host interns, the number of students who participate in them is still rather low (Visher et al., in press).

Evaluations of the effects of internships on student outcomes are nearly nonexistent. However, one study, conducted by Northwest Regional Education Labs (Wang & Owens, 1995a, 1995b), described how students performed in a summer internship program sponsored by the Boeing Corporation. The primary effect of this internship program, according to the findings of this study, was that students increased their technical competence. A secondary effect was that students reported having a better understanding of how the academic concepts they were learning in school were related to their work experiences, even though some were concerned that the work experiences were not very well connected to the material in courses students took at school.

School-Based Enterprises

A school-based enterprise has the potential of directly linking students, curriculum, and the world of work. School-based enterprises, for the purposes of this overview, are defined as school-sponsored, work-based learning opportunities in which a group of students produce goods or services for sale, participate in multiple aspects of the enterprise, and relate service and production activities to classroom learning.[11]

School-based enterprises have a relatively long tradition in American high schools. Current estimates of their prevalence in public high schools range between 15 and 19 percent of all schools (Levesque, Hoachlander, Livingston, & Retallick, 1994; Visher et al., in press; Hershey et al., 1997).

To date, few outcome studies of school-based enterprises have been published. On the other hand, a handful of process and implementation studies have documented that these programs are feasible and offer some advantages over internships and apprenticeships (Stern, Stone, Hopkins, McMillion, & Crain, 1994). For example, school-based enterprises are

- Available to students in isolated rural communities where few businesses are available to support internships;
- Appropriate for students who are not ready for activities in the workplace; and
- Can easily be connected to career major instruction in the classroom.

Project-Based Learning

Project-based instruction that incorporates work experiences is yet another approach that schools are taking to link careers with classroom learning. One evaluation of 16 innovative school-to-work programs reported that several sites have organized their curriculum around projects (Pedraza, 1997). For example, a school in Cambridge, Massachusetts offers upper-level courses in which students earn credits in language arts, social studies, and technical arts by designing and completing a community-based service project aimed at addressing clearly identified community problems. Similarly, teachers at a school in Central Point, Oregon require students to complete several work-related projects in the classroom so that they can prepare for actual workplace experience. As reported in this study, this approach is useful for younger students not yet ready to spend long periods at a workplace without supervision by school staff.

Making the Connection

The full potential of the programs described above is often not realized because they tend to operate in isolation from the rest of the student's high school experience, are restricted to vocational students, or are unstructured. A recent national study of the implementation of the STWOA (Hershey et al., 1997) found that attempts to link school and worksite learning were not unusual, but programs were often limited in depth or reached few students. Only 16 percent of seniors reported that they had completed an in-depth assignment requiring them to use or describe their workplace skills or experiences for a grade in an academic course.

---

[11] This definition is borrowed from Rahn et al. (1995).

Much of the difficulty in coordinating students' work and school experience can be explained by problems in incorporating these activities into the traditional high school schedule. Structured school schedules where students must take a prescribed set of courses at certain times make it difficult to accommodate the needs of students who are participating in workplace learning programs (Poczik, 1995). Teachers also have trouble finding time to meet with employers in order to design ways to integrate students' learning experiences (Kopp & Kazis, 1995; Hamilton & Hamilton, 1997).

Summary

High school students have always taken paid or volunteer work while attending school. However, linking such work-based experiences to classroom learning was a little known phenomenon until the STWOA boosted these efforts. Now, more and more high schools are offering programs such as cooperative education, internships, apprenticeships, school-based enterprises, and other activities to bring the workplace into the classroom and vice versa.

In reviewing the literature on the effects of work-based learning programs on student outcomes, Stern (1997) and others conclude that while participation in work-based activities carries some clear benefits, most of the evidence is anecdotal. Little or no solid empirical evidence exists to confirm that participation in such activities leads to improved academic achievement. Stern noted that

> All of these studies, however, rely on reports by participants themselves about what they are learning. Objective measures, and comparisons with nonparticipants, are lacking. We cannot tell whether the positive reports indicated a true effect of [work-based learning], as opposed to the effect of recruiting participants who are enthusiastic about [work-based learning] to begin with, or the Hawthorne effect of participating in something innovative that attracts attention. (p. 5)

References

Bailey, T. (Ed.). (1995). *Learning to work: Employer involvement in school-to-work transition programs.* Washington DC: The Brookings Institute.

Barton, P. (1996). *Cooperative education in high school: Promise and neglect.* Princeton, NJ: Educational Testing Services.

Goldberger, S., Kazis, R., & O'Flanagan, M.K. (1994). *Learning through work: Designing and implementing quality worksite learning for high school students.* New York: Manpower Demonstration Research Corporation.

Hamilton, M., & Hamilton, S. (1997). *Learning well at work: Choices for quality.* Ithaca, NY: Cornell University.

Hershey, A., Hudis, P., Silverberg, M., & Haimson, J. (1997). *Partners in progress: Early steps in creating school-to-work systems.* Princeton, NJ: Mathematica Policy Research, Inc.

Kopp, H., & Kazis, R. (1995). *Promising practices: A study of ten school-to-career programs.* Boston, MA: Jobs for the Future.

Levesque, K., Hoachlander, E.G., Livingston, A., & Retallick, L. (1994). *School-to-work facts.* Berkeley, CA: National Center for Research in Vocational Education and MPR Associates.

Orr, M. (1995). *Wisconsin youth apprenticeship program in printing: Evaluation 1993–1995.* Boston, MA: Jobs for the Future.

Pedraza, R. (1997). *Home-grown progress.* New York: Manpower Demonstration Research Corporation.

Poczik, R. (1995). Work-based education and school reform. In T. Bailey (Ed.), *Learning to work: Employer involvement in school-to-work transition programs.* Washington, DC: The Brookings Institution.

Rahn, M.L., Alt, M.N., Emanuel, D., Ramer, C.G., Hoachlander, E.G., Holmes, P., Jackson, M., Klein, S.G., & Rossi, K. (1995). *Getting to work: A guide for better schools.* Berkeley, CA: National Center for Research in Vocational Education.

Ramsey, K., Eden, R., Stasz, C., & Bodilly, S. (1995). Integrating vocational and academic education: Lessons from early innovators. In W.N. Grubb (Ed.), *Education through occupations in American high schools* (Vol. 2, pp. 7–34). New York: Teachers College Press.

Stasz, C., Kaganoff, T., & Eden, R.A. (1994). Integrating academic and vocational education: A review of the literature, 1987–1992. *The Journal of Vocational Education Research, 19*(2), 25–72.

Stern, D. (1997, November). The continuing promise of work-based learning. *Centerfocus, 18,* 1–6. Berkeley, CA: National Center for Research in Vocational Education.

Stern, D., Stone, J.R., Hopkins, C., McMillion, M., & Crain, R. (1994). *School-based enterprise: Productive learning in American high schools.* San Francisco: Jossey-Bass.

Stone, J.R. (1995). Cooperative vocational education in the urban school: Towards a systems approach. *Education and Urban Society, 27*(3), 328–352.

Visher, M., Lauen, D., Merola, L., & Medrich, E. [in press]. *School-to-work in the 1990s: A look at programs and practices in American high schools.* Washington, DC: U.S. Department of Education.

Wang, C., & Owens, T. (1995a). *The Boeing Company Applied Academics Project evaluation: Year four.* Portland, OR: Northwest Regional Educational Laboratory.

Wang, C., & Owens, T. (1995b). *The Boeing Company's Manufacturing Technology Student Internship evaluation report 1994–1995.* Portland, OR: Northwest Regional Educational Laboratory.

Suggested Reading

Bottoms, G., & Creech, B. (1997). *Reading performance of career bound students: Good news for the 1996 High Schools That Work assessment.* Atlanta, GA: Southern Regional Education Board.

Bottoms, G., Creech, B., & Johnson, M. (1997, June). Academic and vocational teachers working together contribute to higher levels of student achievement. *High Schools That Work Research Brief, 9,* 1–8.

Bottoms, G., & Mikos, P. (1996). *Seven most-improved High Schools That Work sites raise achievement in reading, mathematics, and science.* Atlanta, GA: Southern Regional Education Board.

Bragg, D. (1994). *Tech prep implementation in the United States: Promising trends and lingering challenges.* Berkeley, CA: National Center for Research in Vocational Education.

Bragg, D., Kirby, C., Puckett, P., Trinkle,.K., & Watkins, L. (1994). *Building a preferred future with tech prep systems.* Berkeley, CA: National Center for Research in Vocational Education.

Bucci, P. (1995). *PACE Model Tech Prep Education Project: Evaluation report.* Washington, DC: Academy for Educational Development.

Cibulka, J. (1996). *Coordination among schools, families, and communities.* Albany, NY: State University of New York Press.

Colorado State Department of Education. (1995). *High expectations, high achievements: State report card 1995. K–12 public education in Colorado.* Denver, CO: Author.

Comer, J.P., Haynes, N.M., Joyner, E.T., & Ben-Avie, M. (Eds.). (1996). *Rallying the whole village: The Comer process for reforming education.* New York: Teachers College Press.

Cunanan, E.S., & Maddy-Bernstein, C. (1997). *Exemplary career guidance programs 1995: Secondary and postsecondary.* Berkeley, CA: National Center for Research in Vocational Education.

Decision Information Resources. (1995). *Evaluation of tech prep system development and implementation in Texas public schools and institutions of higher education.* Houston, TX: Author.

Foothill Associates. (1997). *California partnership academies 1995–1996 evaluation report.* Nevada City, CA: Author.

Goldberger, S. (1993). *Creating an American-style youth apprenticeship program: A formative evaluation of Project ProTech.* Boston: Jobs for the Future.

Grubb, N. (1995). *Education through occupations in American high schools.* New York: Teachers College Press.

Kemple, J. (1997). *Career academies: Communities of support for students and teachers: Emerging findings from a 10-site evaluation.* New York: Manpower Demonstration Research Corporation.

Kemple, J., & Rock, J. (1996). *Career academies: Early implementation lessons from a 10-site evaluation.* New York: Manpower Demonstration Research Corporation.

Lovelace, B. (1990). *2 (secondary) + 2 (postsecondary) articulated curriculum for health occupations: A how-to manual.* Austin, TX: Paris Junior College. (ERIC Document Reproduction Service No. ED 322 939)

McCharen, B. (1995). *Guidance and counseling: An essential component for effective integration.* New York: Teachers College Press.

Mortimer, J., & Finch, M. (1996). *Adolescents, work, and family.* London: Sage Publications, Inc.

Owens, T. (1995). *Washington Year Two Tech Prep Planning and Implementation Survey summary.* Portland, OR: Northwest Regional Educational Lab.

Pauly, E., Kopp, H., & Haimson, J. (1995). *Home-grown lessons: Innovative programs linking school and work.* New York: Manpower Demonstration Research Corporation.

Really, J. (1992). *Mentorship: The essential guide for schools and business.* Dayton, OH: Ohio Psychology.

Silverberg, M. (1995). *The emergence of tech-prep at the state and local levels.* Princeton, NJ: Mathematica Policy Research, Inc.

Silverberg, M. (1996a). *Building school-to-work systems on a tech-prep foundation.* Princeton, NJ: Mathematica Policy Research, Inc.

Silverberg, M. (1996b). *The continuing development of local tech-prep initiatives.* Princeton, NJ: Mathematica Policy Research, Inc.

Stern, D., Dayton, C., Paik, I., & Weisberg, A. (1989, Winter). Benefits and costs of dropout prevention in a high school program combining academic and vocational education: Third-year results from replications of the California partnership academies. *Educational Evaluation and Policy Analysis, 11*(4), 405–416.

Stern, D., Raby, M., & Dayton, C. (1992). *Career academies: Partnerships for recontructing American high schools.* San Francisco, CA: Jossey-Bass.

U.S. General Accounting Office. (1991). *Transition from school to work: Linking education and worksite training.* Washington, DC: Author.

PROVIDE COUNSELING TO ENCOURAGE IN-DEPTH COLLEGE AND CAREER AWARENESS

Introduction

High-quality guidance counseling is increasingly being viewed as a crucial component in education reform in contemporary high schools. To make the most out of high school and to make informed choices about further education and careers, students need access to information, guidance, and direct experiences in the workplace (McCharen, 1995). Guidance programs can offer the secondary benefits of boosting student motivation and improving school climate.

Research in the area of counseling has focused on three areas:[12]

- Students' and adults' perceptions of the usefulness of counseling;
- Access to counseling and guidance in high schools; and
- The effects of counseling on outcomes such as postsecondary enrollment.

Perceptions of the Role of Counselors

According to many studies, most students look to their counselors, rather than other adults in their lives, for career advice and guidance. Hutchinson and Reagan (1989) found that, if given access, 84 percent of surveyed students would seek out their high school counselors for information about career opportunities; 69 percent would seek out their counselors for help with career decisions; and 62 percent would seek out their counselors for assistance with job hunting.

A majority of low-income students, many of whose parents have not attended college, rely on school counselors as their most important source of information about postsecondary school options. This is in contrast to middle class students who are more likely to name their parents first and counselors second as the most helpful individuals they spoke with about their college choice. African-Americans are more likely than Caucasians to use high school counselors and less likely to use their families as a resource for this important decision (Johnson, Stewart, & Eberly, 1991).

---

[12] Mentorship, originally included in this section, is discussed in the section "Forge Active Student Support Alliances Involving Educators, Employers, Parents, and Communities."

Brown, Minor, and Jepsen (1992) surveyed 1,350 adults about their perceptions of how much access high school students should have to counselors. The results of this study showed that many believe that high school students need more guidance in a range of areas, including choosing careers (44 percent); finding opportunities to develop job skills (53 percent); identifying job openings (46 percent); getting jobs (51 percent); using information about occupations and careers (41 percent); and developing employability skills (43 percent).

Access to Counseling Services

Although students expect and want help from their counselors, studies have suggested that surprisingly few students have adequate access to counseling services. Chapman, O'Brien, and DeMasi (1987), for example, observed that students visited their counselors only a few times during the year, and Pauly, Kopp, and Haimson (1995) concluded that access to college guidance counseling is particularly limited.

Why do so few students receive so little guidance and counseling? The primary reason is that most high school counselors are responsible for hundreds of students at any one time. In fact, in large comprehensive high schools it is not uncommon for counselors to have caseloads of more than 400 students. Furthermore, more and more responsibilities and roles are being assigned to today's counselors, some of which have little to do with counseling. At least one study found that guidance counselors spend more time on administrative work than on actual counseling (Moles, 1991). A typical high school counselor in a comprehensive high school today is expected to "wear many hats"—that is, to assist students with their educational planning; serve as coordinator for career education field trips; establish and operate career resource centers; develop job placement and part-time work experiences; and encourage parental involvement (Minkoff, 1990). In addition, counselors are the first point of contact for teachers who need help coping with students who have behavioral problems, often spending the majority of their time with relatively few, more troubled students. Counselors also coordinate and administer interest and aptitude tests and collect and disseminate information about colleges and financial aid. With this job description, it is not difficult to understand why students (and their parents) feel like they do not have adequate access to counselors and why counselors feel overwhelmed.

Although counselors are unable to spend much one-on-one time with students, several studies have shown that high schools are succeeding in providing career awareness activities. As an example, Moles (1991) found that 69 percent of schools offered a course on career decision making; 75 percent provided students with job-shadowing opportunities; and 88 percent arranged exploratory work experience for juniors and seniors. The 1994 School-to-Work Opportunities Act has also stimulated more energetic career counseling in some schools. In a study of school-to-work implementation, Hershey, Hudis, Silverberg, and Haimson (1997) found that career development activities have been the most widely implemented aspect of the school-to-work movement, facilitated partly by an increase in paid school-to-work coordinator positions. These coordinators devote considerable time to career development activities. As reported in this study, almost 80 percent of seniors surveyed in 1996 had completed interest inventories and had attended employer presentations during high school, and 62 percent had participated in work site visits or job shadowing. Visher, Lauen, Merola, and Medrich (in press) found similar patterns in the prevalence of these types of activities in a nationally representative sample of public high schools.

The findings that a large percentage of students in high schools are participating in career awareness activities suggest that schools are finding ways to provide a less costly kind of counseling than the traditional one-on-one model. Taking 50 juniors on a field trip to a local business site or putting on a career fair is far less labor intensive than meeting individually with 50 students to discuss career options. Making skills and interest inventories and career pathway information available using one of the many software packages developed for this purpose goes a long way in large, busy high schools. This is not to suggest that any or all of the above activities can replace one-on-one counseling. Nevertheless, schools are increasingly trying out combinations of strategies to meet the counseling needs of their students.

The Effects of Counseling

According to Maddy-Bernstein et al. (1995), successful counseling programs promote three critical processes for high school students:

- Self-knowledge and self-awareness;
- Education and occupational exploration; and
- Decision making and career and educational planning.

The U.S. Department of Education has supported a number of research projects that use large national databases to examine the impact of career and college counseling on students' education and vocational choices several years after they leave high school. In two such studies, Lee and Ekstrom (1987) and Hotchkiss and Vetter (1987) used national sample survey data from the High School and Beyond, a longitudinal study that has tracked high school sophomores since 1980, to determine how school guidance programs have affected labor market and educational outcomes. Although these studies only reported access to rather than actual receipt of counseling services, the researchers concluded that *access to counseling* has statistically significant impacts on the likelihood of enrolling in college. Hotchkiss and Vetter's analysis also suggested that youth that had more access to good counseling and guidance tended to have higher career aspirations than did other youth. As Lee and Ekstrom found, students from lower socioeconomic status families, minority students, and those from small schools—all of whom were less likely to have access to guidance counseling than other students—were also less likely to be placed in academic tracks and to take high level mathematics courses.

Summary

Research on career and college counseling has a long history in educational policy and research. A number of large databases with nationally representative samples of schools and students have supported many analyses of access to counseling. These studies focus on whether or not counseling appears to make a difference in outcomes such as increasing students' career awareness or smoothing their transition from school to career or school to college. On the whole, research on this topic indicates that

1) Students and parents continue to rely on high school counselors for information and assistance in making important career and educational decisions;
2) Access to counselors is limited, partly because the student/counselor ratio tends to be very high and counselors in today's high schools are expected to assume an ever increasing number of roles and responsibilities;
3) Schools are learning efficient, new ways to help students learn about their career options; and
4) When students do receive counseling it seems to pay off, both during their high school careers and afterwards.

References

Brown, D., Minor, C., & Jepsen, D. (1992). Public support for career development activities in America's schools: Report of the 1989 NCDA survey. *The School Counselor, 39,* 257–262.

Chapman, D.W., O'Brien, C.J., & DeMasi, M.E. (1987, Spring). The effectiveness of the public school counselor in college advising. *Journal of College Admissions, 115,* 11–18.

Hershey, A., Hudis, P., Silverberg, M., & Haimson, J. (1997). *Partners in progress: Early steps in creating school-to-work systems.* Princeton, NJ: Mathematica Policy Research, Inc.

Hotchkiss, L., & Vetter, L. (1987). *Outcomes of career guidance and counseling.* Columbus, OH: National Center for Research in Vocational Education.

Hutchinson, R.L., & Reagan, C.A. (1989). Problems for which students would seek help from high counselors. *The School Counselor, 36,* 271–279.

Johnson, R.G., Stewart, N.R., & Eberly, C.G. (1991). Counselor impact on college choice. *The School Counselor, 39,* 84–90.

Lee, V.E., & Ekstrom, R.B. (1987). Student access to guidance counseling in high school. *American Educational Research Journal, 24,* 287–310.

Maddy-Bernstein, C., Matias, Z.B., Cunanan, E.S., Krall, B.T., Kantenberger, J.A., & Iliff, L. (1995). *Inclusion/detracking: A resource guide.* Berkeley, CA: National Center for Research in Vocational Education.

McCharen, B. (1995). *Guidance and counseling: An essential component for effective integration.* New York: Teachers College Press.

Minkoff, H.B. (1990). Career guidance as a link to excellence: Helping youth build their futures. *NASSP Bulletin, 48,* 53–57.

Moles, O.C. (1991). Guidance programs in American schools: A descriptive portrait. *The School Counselor, 38,* 163–177.

Pauly, E., Kopp, H., & Haimson, J. (1995). *Home-grown lessons: Innovative programs linking school and work.* New York: Manpower Demonstration Research Corporation.

Visher, M., Lauen, D., Merola, L., & Medrich, E. [in press]. *School-to-work in the 1990s: A look at programs and practices in American high schools.* Washington, DC: U.S. Department of Education.

Suggested Reading

Bottoms, G., & Creech, B. (1997). *Reading performance of career bound students: Good news for the 1996 High Schools That Work assessment.* Atlanta, GA: Southern Regional Education Board.

Bottoms, G., Creech, B., & Johnson, M. (1997, June). Academic and vocational teachers working together contribute to higher levels of student achievement. *High Schools That Work Research Brief, 9,* 1–8.

Bottoms, G., & Mikos, P. (1996). *Seven most-improved High Schools That Work sites raise achievement in reading, mathematics, and science.* Atlanta, GA: Southern Regional Education Board.

Bragg, D. (1994). *Tech prep implementation in the United States: Promising trends and lingering challenges.* Berkeley, CA: National Center for Research in Vocational Education.

Bucci, P. (1995). *PACE Model Tech Prep Education Project: Evaluation report.* Washington, DC: Academy for Educational Development.

Cave, G., & Quint, J. (1990). *Career beginnings impact evaluation: Findings from a program for disadvantaged high school students.* New York: Manpower Demonstration Research Corporation.

Center for the Study of Social Policy. (1995). *Building new futures for at-risk youth: Findings from a five-year, multi-site evaluation.* Washington, DC: Author.

Cibulka, J. (1996). *Coordination among schools, families, and communities.* Albany, NY: State University of New York Press.

Colorado State Department of Education. (1995). *High expectations, high achievements: State report card 1995. K–12 public education in Colorado.* Denver, CO: Author.

Comer, J.P., Haynes, N.M., Joyner, E.T., & Ben-Avie, M. (Eds.). (1996). *Rallying the whole village: The Comer process for reforming education.* New York: Teachers College Press.

Decision Information Resources. (1995). *Evaluation of tech prep system development and implementation in Texas public schools and institutions of higher education.* Houston, TX: Author.

Foothill Associates. (1997). *California partnership academies 1995–1996 evaluation report.* Nevada City, CA: Author.

Katz, R.H., Jackson, L.J., Reeves, K., & Benson, C.S. (1995). Urban career magnet high schools. In. W.N. Grubb (Ed.), *Education through occupations in American high schools: Vol. I* (pp. 114–133). New York: Teachers College Press.

Katzman, S. (Ed.). (1995). *The role of career education in school-to-work transition.* Columbus, OH: ERIC Clearinghouse on Adult, Career and Vocational Education, Center on Education and Training for Employment, College or Education, Ohio State University. (ERIC No. ED 378 381)

Lieberman, A., & Grolnick, M. (1996, Fall). Networks and reform in American education. *Teachers College Record, 98*(1), 7–45.

Lovelace, B. (1990). *2 (secondary) + 2 (postsecondary) articulated curriculum for health occupations: A how-to manual.* Austin, TX: Paris Junior College. (ERIC Document Reproduction Service No. ED 322 939)

Mortimer, J., & Finch, M. (1996). *Adolescents, work, and family.* London: Sage Publications, Inc.

Nielsen-Andrew, E., & Grubb, N. (1992). *Making high schools work: Patterns of school reform and the integration of vocational and academic education.* Berkeley, CA: National Center for Research in Vocational Education.

Owens, T. (1995). *Washington Year Two Tech Prep Planning and Implementation Survey summary.* Portland, OR: Northwest Regional Educational Lab.

Rahn, M.L., Alt, M.N., Emanuel, D., Ramer, C.G., Hoachlander, E.G., Holmes, P., Jackson, M., Klein, S.G., & Rossi, K. (1995). *Getting to work: A guide for better schools.* Berkeley, CA: National Center for Research in Vocational Education.

Ramer, M. (1991). *Community college/high school articulation in California: 2+2 program definition and barriers to implementation.* Sacramento, CA: California Community College Administrators for Occupational Education.

Silverberg, M. (1995). *The emergence of tech-prep at the state and local levels.* Princeton, NJ: Mathematica Policy Research, Inc.

Silverberg, M. (1996a). *Building school-to-work systems on a tech-prep foundation.* Princeton, NJ: Mathematica Policy Research, Inc.

Silverberg, M. (1996b). *The continuing development of local tech-prep initiatives.* Princeton, NJ: Mathematica Policy Research, Inc.

Stern, D., Dayton, C., Paik, I., & Weisberg, A. (1989, Winter). Benefits and costs of dropout prevention in a high school program combining academic and vocational education: Third-year results from replications of the California partnership academies. *Educational Evaluation and Policy Analysis, 11*(4), 405–416.

Stern, D., Raby, M., & Dayton, C. (1992). *Career academies: Partnerships for recontructing American high schools.* San Francisco, CA: Jossey-Bass.

REORGANIZE THE SCHOOL DAY INTO FLEXIBLE, RELEVANT SEGMENTS

Introduction

Reforms in curriculum and pedagogy in the last few years have heightened longstanding concerns in the education community that the traditional structure of the American high school has become outdated. One particularly antiquated tradition is the continued use of a daily schedule that requires students to spend between 45 and 55 minutes in seven or eight separate classes. Critics believe that this approach to scheduling lies at the root of many of the problems in high schools, including a fragmented curriculum, superficial coverage of material, inhibition of the development of analytic and problem-solving skills, suppression of the enjoyment of learning, and weak teacher-student relationships.

In the last five years, more and more schools have embraced alternative forms of scheduling. Several surveys show that up to 39 percent of all public high schools had adopted block scheduling by the mid 1990s (Visher, Lauen, Merola, & Medrich, in press; Hackman, 1995). Block scheduling has been widely implemented in certain states, including North Carolina, Colorado, Florida, Virginia, and Texas (O'Neil, 1995). For example, one study (Edwards, 1995b) noted that 64 percent of North Carolina's high schools had adopted a flexible schedule, while 46 percent of Virginia's high schools had done so (O'Neil, 1995).

This section addresses the research on the topic of scheduling, specifically:

- The various types of new and flexible scheduling adopted in recent years, and
- The effects of flexible scheduling on student performance.

Types of Flexible Scheduling

Four types of flexible scheduling have gained popularity among schools in recent years: the *alternate day*, *4x4*, *Copernican*, and *trimester* models. Each approach organizes the day, week, and months in a somewhat different way. What they have in common is the goal of lengthening blocks of learning time and reducing the number of transitions students need to make between classes, subjects, and experiences. The following provides a brief description of these approaches to flexible scheduling.

Alternate day. Under this plan, students take six to eight subjects that are spread over two days. For example, students may take mathematics, science, physical education, and an elective for 90 minutes each on an "A" day, and social studies, English, foreign language, and another elective on a "B" day.

4x4. This approach builds on a four-class 90-minute period format, and consolidates year-long courses into semester-long courses. Students take fewer classes at any one time under this format. Proponents argue that the 4x4 plan allows students to pace themselves more effectively. For example, students who wish to move quickly through their studies can take postsecondary courses in their senior year. Similarly, students who fail a course in the first semester can retake the course in the second semester and not fall behind their grade cohort.

Copernican. This approach divides the year into three 60-day trimesters, where students take a small number of subjects at any one time. Organized like intensive summer school courses, students enroll in one 4-hour class each day for 30 days or take two morning classes (ranging from 90 minutes to two hours) each trimester. When using this model, teachers have fewer students, which creates a more manageable workload for both groups and improves student-teacher relationships (Carroll, 1994; Canady & Rettig, 1993).

Trimester. Under this model, the school year is divided into three 12-week terms with all academic and most elective courses scheduled for two-hour blocks daily. Some schools require students to take up to five courses that meet daily for 70 minutes (Geismar & Pullease, 1996; Stumpf, 1995). Another trimester approach known as "75-75-30" organizes instruction in three blocks of time—two terms lasting 75 days and one lasting 30 days. Students enroll in three 112-minute periods daily for the 75-day terms and take an elective in another 48-minute course that meets daily. Two of the three block courses taught at any one time are academic courses, while the third may be physical education or an elective. The 30-day spring term offers students the opportunity to study one or two subjects intensively. During the spring term, students might choose to intensify and accelerate their studies in a favorite discipline, repeat a failed course, or enroll in one full-credit elective (Canady & Rettig, 1993).

Assessing the Effects of Flexible Scheduling

Evaluating the impact of flexible scheduling on student performance is difficult because changes in outcomes can be due to a host of school-level improvement strategies. It is almost impossible to isolate the effect of block scheduling from the effects of other changes in practices on outcomes. Moreover, block scheduling is best thought of as a *facilitating* condition—a way to organize time that allows teachers and students to make the most out of school- and work-based learning experiences. Nevertheless, a number of positive trends can be gleaned from the many evaluations conducted on flexible scheduling, as described below.

Supported by teachers and students. The majority of schools that have implemented flexible scheduling have reported that this change was received favorably by teachers and students. In a study of block scheduling in Oregon, for example, Irmsher (1996) found that only two of the dozens of schools that had adopted this approach switched back to the traditional schedule. Several studies observed that even among schools where it had been difficult to implement block scheduling, the majority of teachers and students eventually supported the initiative (Salvaterra & Adams, 1995; Queen, Algozzine, & Eaddy, 1997).

Reduces discipline problems. A number of studies have reported that student discipline problems decline as a result of flexible scheduling. This is commonly attributed to having fewer passing periods, a more relaxed school climate, and a higher level of motivation and engagement among students (Kramer, 1997; Guskey & Kifer [as cited in Fletcher, 1997]; Hackman, 1995; Carroll, 1994; Salvaterra & Adams, 1995; Buckman, King, & Ryan, 1995).

Boosts school attendance. A few studies have concluded that block scheduling boosts student attendance (Fallon; Schoenstein; Embriano & Ryan [as cited in Fletcher, 1997]; Hackman, 1995; O'Neil, 1995; Carroll, 1994) and decreases the school's dropout rates (Fallon [as cited in Fletcher, 1997]; Carroll, 1994; Shortt & Thayer, 1995; Geismar & Pullease, 1996). Researchers have attributed these improvements to greater student engagement in school either as a result of more varied learning strategies or closer relationships with teachers.

Courses passed. Several studies have indicated that students attending schools with alternate scheduling earn more credits than students attending traditional schools (Embriano & Ryan [as cited in Fletcher, 1997]; Edwards, 1995a; Geismar & Pullease, 1996). According to other studies, students also successfully complete more courses (Fallon;

Schoenstein [as cited in Fletcher, 1997]; Hackman, 1995; O'Neil, 1995). However, there is not complete consensus in the literature on the question of whether block scheduling enhances course completion. One study (Edwards, 1995b), for example, found that a 4x4 schedule in one school led to an increase in the number of courses failed, from 9 to 12 percent. Edwards concluded that semester-long courses made it easier for capable students to improve their grades, but more difficult for students with lower academic achievement to do so.

Who benefits most from flexible scheduling. There is some evidence that block scheduling appears to benefit certain groups of students more than others. In particular, at-risk students may benefit more than others from block schedules (Kramer, 1997; Guskey & Kifer; Cox; Embriano & Ryan; Sigurdson [as cited in Fletcher, 1997]; Carroll, 1994). Kramer (1997) and Carroll (1994) observed that at-risk students performed better if they took fewer but more intense courses (the Copernican approach). On the other hand, Edwards (1995a) found that semester-long courses through a 4x4 schedule made it easier for students to earn more Advanced Placement (AP) credits, but more difficult for students who cut class frequently to do so. Edwards also concluded that 4x4 schedules were most beneficial for 9th graders. Finally, Geismar and Pullease (1996) found that the most effective model for schools with culturally diverse and transitory student populations was the trimester's relatively short grading periods—12 weeks—combined with "transition classes."

Improvements in grades and academic achievement. Several studies (Edwards, 1995a; Stumpf, 1995; Salvaterra & Adams, 1995; Buckman et al., 1995; Hackman, 1995; Fletcher, 1997; O'Neil, 1995) have reported that students were more likely to earn higher grades and be on the honor roll after their schools introduced alternate scheduling. On the other hand, there is little empirical data establishing a clear link between block scheduling and academic achievement as measured by standardized tests (Kramer, 1997; Fletcher, 1997). However, research has shown that students in schools with alternative schedules perform no worse than students in schools with traditional schedules (Kramer, 1997; O'Neil, 1995; Irmsher, 1996; Guskey & Kifer [as cited in Fletcher, 1997]; Carroll, 1994).

Implementing Flexible Scheduling

A number of studies on alternative scheduling have emphasized the challenges and problems inherent in implementing a block schedule. The most commonly mentioned challenges are the following:

- The planning process;
- Faculty support;
- Training and support for teachers;
- Resolving scheduling issues; and
- Transfers between schools with different scheduling approaches.

The planning process. One key to successful implementation of block scheduling, according to several reports, is developing an inclusive and effective planning process. School administrators, staff, and other stakeholders should all participate in such activities as reviewing the experiences of other schools; inviting educators, students, parents, and district personnel to participate in the planning process; designing a schedule that fits the instructional goals of the schools; and carefully measuring and evaluating the effects of these efforts (Hackman, 1995; Buckman et al., 1995; Queen et al., 1997). Although some studies have indicated that several schools successfully implemented a block schedule despite considerable initial opposition from faculty, observers have argued that the process is more effective if broad-based support can be attained early (Kramer, 1997).

Faculty support. Numerous studies have stressed that successful block scheduling depends on obtaining adequate support for professional development opportunities. Block scheduling, especially when it leads to longer periods, demands a different approach to teaching and teachers are sometimes reluctant to move away from traditional lecture and worksheet teaching methods (Kramer, 1997; O'Neil, 1995). One study of two high schools that had implemented block scheduling found that initial support among teachers declined when the principal failed to provide professional development opportunities for teachers to learn new practices to fit the longer instructional periods (Salvaterra & Adams, 1995).

Training and support for teachers. In addition, it appears that even after receiving training, some teachers may continue to resist adopting new practices. In one school, Queen et al. (1997) found that while most students indicated that most teachers were using more creative teaching methods as a result of a new block schedule, a lecture format was still being used in at least 30 percent of the school's classrooms. This school had actively encouraged teachers to use a variety of teaching strategies, even requiring instructors who received an unsatisfactory evaluation to design a corrective action plan.

Resolving scheduling issues. Some educators have argued that because of their sequential nature, disciplines such as foreign languages, music, and, in some cases, mathematics should be offered daily and are not good candidates for block scheduling (O'Neil, 1995; Canady & Rettig, 1993; Irmsher, 1996). In other cases, parents and students have raised concerns that trimester courses for AP topics are offered only in the fall trimester, while the exam is given in the spring. Many schools considering block scheduling have wrestled with these issues. Some schools have tried to adapt models to suit their own purposes, using, for example, a rotating alternate schedule where two or three courses are offered for extended blocks (90 to 120 minutes); however, certain courses, such as music, foreign language, or AP subjects, are offered daily but in a more traditional period of 45–50 minutes. This approach strikes a balance between providing longer instructional periods for most classes, while at the same time ensuring that some classes meet daily.

Transfers between schools with different scheduling approaches. Finally, block scheduling models sometimes make it difficult for students from other districts to transfer into a class and make up material (Kramer, 1997; Shortt & Thayer, 1995). For instance, a student who transfers in the middle of the semester into a biology course in a school with a 4x4 approach misses what used to be covered in an entire semester, making it difficult for the student to catch up with other students. Similarly, block scheduling makes it difficult to determine how many credits students should receive when transferring to another school.

Summary

Schools have long experimented with different models of scheduling, and a substantial amount of research has documented both how and in what form flexible scheduling has been tried, as well as how flexible scheduling affects student and school outcomes. The results are generally quite positive. Again, these studies are often hampered by the difficulty inherent in trying to isolate the influence of scheduling (in particular, block scheduling) from the influences of other practices going on in the school at the same time. A wealth of studies conclude that flexible scheduling approaches have improved the climate and morale of students in schools, reduced discipline problems, and raised the number of courses completed. However, there is little strong evidence that academic achievement is enhanced as a result of flexible scheduling. Creative scheduling, like school size, appears to be a key factor in creating the conditions under which other practices, such as providing work-based learning opportunities, can flourish and which, in turn, can more directly affect academic achievement and other outcomes.

References

Buckman, D., King, B., & Ryan, S. (1995, May). Block scheduling: A means to improve school climate. *NASSP Bulletin, 79*(571), 9–19.

Canady, R., & Rettig, M. (1993). Unlocking the lockstep high school schedule. *Phi Delta Kappan, 75*(3), 310–314.

Carroll, J. (1994). The Copernican plan evaluated: The evolution of a revolution. *Phi Delta Kappan, 76*(2), 105–113.

Edwards, C. (1995a). The 4x4 plan. *Educational Leadership, 53*(3), 16–19.

Edwards, C. (1995b). Virginia's 4x4 high schools: High school, college, and more. *NASSP Bulletin, 79*(571), 23–41.

Fletcher, R. (1997). *A study of block scheduling in six high schools in the Upper Cumberland region of Tennessee.* Revision of paper presented at the annual meeting of the Tennessee Academy of Science, Swansee, TN, November 1996. (ERIC Microfiche Collection No. ED 403 644)

Geismar, T., & Pullease, B.G. (1996, September). The trimester: A competency based model of block scheduling. *NASSP Bulletin, 80*(581), 95–105.

Hackman, D. (1995). Ten guidelines for implementing block scheduling. *Educational Leadership, 53*(3), 24–27.

Irmsher, K. (1996). *Block scheduling in high schools*. Eugene, OR: Oregon Student Study Council.

Kramer, S. (1997). What we know about block scheduling and its effects on math instruction: Part II. *NASSP Bulletin, 81*(587), 69–82.

O'Neil, J. (1995). Finding time to learn. *Educational Leadership, 53*(3), 11–15.

Queen, J.A., Algozzine, R.F., & Eaddy, M.A. (1997). The road we traveled: Scheduling in the 4x4 block. *NASSP Bulletin, 81*(588), 88–99.

Salvaterra, M., & Adams, D. (1995). Departing from tradition: Two schools' stories. *Educational Leadership, 53*(3), 32–35.

Shortt, T.L., & Thayer, Y. (1995, May). What can we expect to see in the next generation of block scheduling? *NASSP Bulletin, 79*(571), 53–62.

Stumpf, T. (1995). A Colorado school's un-rocky road to trimesters. *Educational Leadership, 53*(3), 20–22.

Visher, M., Lauen, D., Merola, L., & Medrich, E. [in press]. *School-to-work in the 1990s: A look at programs and practices in American high schools.* Washington, DC: U.S. Department of Education.

Suggested Reading

Pauly, E., Kopp, H., & Haimson, J. (1995). *Home-grown lessons: Innovative programs linking school and work.* New York: Manpower Demonstration Research Corporation.

Rahn, M.L., Alt, M.N., Emanuel, D., Ramer, C.G., Hoachlander, E.G., Holmes, P., Jackson, M., Klein, S.G., & Rossi, K. (1995). *Getting to work: A guide for better schools.* Berkeley, CA: National Center for Research in Vocational Education.

Silverberg, M. (1995). *The emergence of tech-prep at the state and local levels.* Princeton, NJ: Mathematica Policy Research, Inc.

Silverberg, M. (1996a). *Building school-to-work systems on a tech-prep foundation.* Princeton, NJ: Mathematica Policy Research, Inc.

Silverberg, M. (1996b). *The continuing development of local tech-prep initiatives.* Princeton, NJ: Mathematica Policy Research, Inc.

ASSESS STUDENTS' PROGRESS BY WHAT THEY ARE CAPABLE OF DOING

Introduction

Few issues in education have received more careful scrutiny in recent years than that of assessment—how to measure student achievement. Many educators have become convinced that traditional assessment techniques, such as multiple-choice tests and other pencil-and-paper tests, do a poor job of measuring what students know. Thus, schools are increasingly looking for more "authentic" methods of assessment that measure learning in a more valid way (Darling-Hammond, Ancess, & Falk, 1995; Stecher et al., 1997; Rahn et al., 1995; Koretz, Stecher, Klein, McCaffrey, & Deibert, 1994; Hoover & Bray, 1995). Alternative approaches to assessment also enhance teaching practices by encouraging teachers to think more deeply about their objectives, methods, and results, and promote a curriculum that aligns assessment with educational values, goals, and practices (Darling-Hammond et al., 1995). Proponents of alternative assessment believe that such techniques hold the promise of helping students assume greater responsibility for and ownership of their work and encouraging them to regularly analyze and reflect on their progress.

Because the use of alternative assessment techniques in high schools is relatively new, little evidence exists regarding their validity, reliability, or potential to motivate students. In addition, in most schools undergoing reform, alternative assessment is only one part of a broader set of efforts designed to improve the quality of education, including changes in curriculum, teaching styles, and school organization. Even in cases where new assessment strategies have driven reform, no studies have attempted to determine how accurately or reliably these new methods measure what students know or can do. Rather than reviewing the evaluation literature on this subject, therefore, this section addresses the advantages and disadvantages of traditional assessment techniques and then presents four types of alternative assessment being increasingly used in high schools:

- Written assessment;
- Performance tasks;

- Senior projects; and
- Portfolios.

Traditional Assessment Strategies

For decades, students' progress has been measured using tools such as multiple-choice and other pen-and-pencil tests that ask students to "play back" knowledge and facts they have been taught. In these tests, students are asked to select or compose a short response to a stimulus or prompt in a specified amount of time. Such standardized tests are usually highly reliable in that they provide an accurate and stable measure of the student's mastery of the material being tested (Hoachlander, 1998). Standardized tests also help researchers compare results across individual students or groups of students (Koretz et al., 1994). Furthermore, the cost and administration time involved in administering a multiple-choice or open-ended response test is minimal in comparison to that for other forms of assessment (Hoover & Bray, 1995).

Critics of traditional assessment methods, including Hoover and Bray (1995), Koretz et al. (1994), and Shepard and Dougherty (1991), are concerned that

- Students guess the correct answers;
- Students' test-taking ability might affect test results;
- Tests might encourage students to take a passive approach to learning;
- Tests might lead to a narrowing of curriculum;
- Test preparation practices might inflate scores in high-stakes situations; and
- Tests might contain a "cultural bias" that could result in some ethnic groups faring better than others.

Alternative Assessment Strategies

Alternative strategies, including performance-based measurement such as essays, performance events, senior projects, portfolios, and other forms of assessment in which students can provide a detailed demonstration of what they know are gaining ground in U.S. high schools. The distinguishing feature of most alternative assessments is "authenticity"—in other words, students perform an activity or task as it would be done in practice rather than selecting from a fixed set of alternatives (Darling-Hammond et al., 1995). Proponents argue that authentic assessment offers greater validity than multiple-choice tests because success is closely tied to the criterion of interest, be it writing, problem solving, or demonstrating mastery of occupational skills. On the negative side, student performance is not as consistent from one task to the next as it is with multiple-choice items, and alternative assessment scores are not as dependable, interpretable, or "portable" as those of traditional tests (Shavelson, Baxter, & Gao, 1993; Koretz et al., 1994). Others contend that alternatives to multiple-choice assessments are more costly and time consuming to develop, administer, and score (Hoover & Bray, 1995). Although these issues are currently unresolved at present, there do appear to be trade-offs between cost, intrusiveness, dependability, and interpretability.

Written Assessments—Essays and Problem-Based Scenarios

Compared with multiple-choice or short-answer tests, written tests that include essays, word problems, or scenarios may present more complex situations, demand more advanced reasoning, and measure higher levels of understanding. Essays, for example, require a relatively lengthy written response that can be scored in terms of creativity, content, and/or conventions. On the other hand, problem-based examinations use mathematical word problems and more open-ended situations based on real-life scenarios that require students to apply their knowledge and skills to a realistic setting. A scenario-based exam is similar, but the setting is described in greater detail and the problem may be less specific, thus calling for greater creativity (Stecher et al., 1997). One major disadvantage of the essay approach is its relative cost: teams of trained individuals are needed to evaluate the essays, or in the absence of a team, a single teacher must spend much more time per student in grading the student's answers. Teachers may also rely too heavily on students' communication skills rather than on their knowledge of the substantive material, a situation that is particularly problematic for students with limited English language proficiency.

Performance Tasks

Performance tasks are hands-on activities that require students to demonstrate their ability to perform certain activities, including designing products or experiments and preparing reports and presentations. Traditionally, educators have relied on performance-based assessment strategies to judge students' mastery of job-specific skills. Proponents of performance tasks claim that these strategies:

- Provide a way for industry to be involved in curriculum development;
- Help students develop career plans by teaching them actual career tasks;
- Prepare students for jobs and postsecondary training;

- Increase student motivation;
- Tap into different skills, talents, and types of intelligence;
- Test transference of knowledge into various situations; and
- Evaluate performance on demand.

Critics point out that this testing strategy is usually costly to develop and implement; requires skills and knowledge that are challenging to assess; may involve special equipment for valid occupational tasks; and lacks validity and reliability (Rahn et al., 1995).

Senior Projects and Portfolios

Senior projects and portfolios are distinct from written assessments and performance tasks because they reflect work done over an extended period of time rather than providing a "snapshot" of work completed at a specific time (Stecher et al., 1997). The senior project usually represents the culmination of an activity that lasts at least a semester and often up to an entire school year. Through a senior project, teachers can assess a student's performance in relation to specific outcomes and performance criteria established ahead of time. In some schools, committees of faculty, peers, and outside evaluators conduct the assessment. This type of assessment is usually designed to emphasize a student's higher order and critical thinking skills, using at least three discrete activities: a research paper, a project, and an oral presentation. Proponents of senior projects claim that these projects encourage teacher collaboration; challenge students to integrate their knowledge from different subjects; clarify students' career plans; increase students' motivation and engagement in school work; and tap into different skills, talents, and types of intelligence. On the other hand, senior projects may be costly to develop and implement; require a lot of staff time and coordination; and are more prone to reliability and validity problems than are traditional assessment instruments (Rahn et al., 1995; Hoachlander, 1998).

The portfolio is a collection of student work and performance documentation, including work samples, official records, and written information from students. In some instances, a portfolio might also include the results of standardized or other written assessment instruments (Stecher et al., 1997). Portfolios, proponents argue, are used to assess multiple outcomes and activities and have the added benefits of improving curriculum, helping students get jobs, and improving employability skills (Darling-Hammond et al., 1995). Critics point out that portfolios are costly to develop, may require buy-in from a great many people, require space to store, and are difficult to grade using valid and reliable criteria (Rahn et al., 1995).

Summary

The literature on education reform contributes much to the debate on how best to measure what students know and have learned. With the proliferation of new teaching methods and curriculum in recent years, this debate has taken on new importance and has raised challenging issues. Should students be tested as before, using standardized achievement tests, when their experiences in school now include work-based learning, curriculum that integrates academic and vocational material, and an emphasis on not only gaining academic knowledge but also learning occupational, leadership, and workplace skills? In many schools, educators do not think so and are introducing alternative approaches to measure what children know and what they can do.

As for many of the reform strategies discussed in this overview, research and evaluation activities have not kept pace with the rate at which these experiments are being conducted throughout schools. Little is currently known about whether these alternative assessment approaches work, in particular, whether they provide valid and reliable measures of what students know and can do, or whether they predict with reasonable accuracy future performance in high school, postsecondary institutions, or the workplace. However, what is known about the relative efficiency and reliability of the range of assessment methods available is that the method that is selected should fit the kind of learning being assessed. As Hoachlander (1998) states, "there is no best way to test. . . . Good, comprehensive assessment is the product of multiple strategies."

References

Darling-Hammond, L., Ancess, J., & Falk, B. (1995). *Authentic assessment in action: Studies of schools and students at work* (Series on school reform). New York: Teachers College Press.

Hoachlander, E.G. (1998). Putting assessment to the test: What's the best measure of knowledge. *Techniques, 73*(3), 14–16.

Hoover, H.D., & Bray, G.B. (1995). *The research and development phase: Can a performance assessment be cost-effective?* Paper presented at the annual meeting of the American Educational Research Association, San Francisco, CA.

Koretz, D.M., Stecher, B.M., Klein, S.P., McCaffrey, D., & Deibert, E. (1994). *Can portfolios assess student performance and influence instruction? The 1991–92 Vermont experience.* Santa Monica: The RAND Corporation.

Rahn, M.L., Alt, M.N., Emanuel, D., Ramer, C.G., Hoachlander, E.G., Holmes, P., Jackson, M., Klein, S.G., & Rossi, K. (1995). *Getting to work: A guide for better schools.* Berkeley, CA: National Center for Research in Vocational Education.

Shavelson, R.J., Baxter, G.P., & Gao, X. (1993, Fall). Sampling variability of performance assessments. *Journal of Educational Measurement, 30*(3), 215–232.

Shepard, L., & Dougherty, K. (1991). *Effects of high stakes testing on instruction.* Paper presented at the annual meeting of the American Educational Research Association and the National Coucil on Measurement in Education, New Orleans.

Stecher, B., Rahn, M.L., Ruby, A., Alt, M.N., Robyn, A.E., & Ward, B. (1997). *Using Alternative Assessments in Vocational Education.* Santa Monica, CA: The RAND Corporation.

Suggested Reading

Colorado State Department of Education. (1995). *High expectations, high achievements: State report card 1995. K–12 public education in Colorado.* Denver, CO: Author.

Herman, J.L., Aschbacher, P.R., & Winters, L. (1992). *A practical guide to alternative assessment.* Alexandria, VA: Association for Supervision and Curriculum Development.

Hershey, A., Hudis, P., Silverberg, M., & Haimson, J. (1997). *Partners in progress: Early steps in creating school-to-work systems.* Princeton, NJ: Mathematica Policy Research, Inc.

Mehrens, W. (1992). Using performance assessments for accountability purposes. *Educational Measurement: Issues and Practice, 11*(1), 3–20.

FORGE PARTNERSHIPS WITH TWO- AND FOUR-YEAR POSTSECONDARY INSTITUTIONS

Introduction

Today most high school students pursue some kind of postsecondary education, whether it is a two- or four-year college or technical training. Yet curriculum alignment between secondary and postsecondary education has been notoriously weak in the United States. Except for helping four-year college-bound students meet a broadly defined set of entrance requirements, high schools traditionally do very little to ensure that the courses they offer will prepare students for their education beyond graduation. To help students achieve success in postsecondary institutions, improved coordination between high schools and postsecondary institutions, it is hoped, will benefit students by (Pauly, Kopp, & Haimson, 1995; Grubb, 1995; Kazis & Niles, 1994; Nathan, 1995; Pelavin & Kane, 1990):

- Encouraging more students to complete more challenging courses in high school;
- Enhancing the high school academic curriculum;
- Increasing college enrollment and retention;
- Accelerating the completion of postsecondary degrees; and
- Reducing the need for remediation at the postsecondary level.

Despite all of these potential benefits, high schools and postsecondary institutions find it difficult to establish collaborative relationships. This section addresses research findings on two areas of collaboration between high schools and postsecondary institutions:

- Articulation agreements; and
- Raised college admission standards.

Articulation Agreements

Articulation agreements are formal arrangements between secondary and postsecondary institutions that have the goal of aligning curriculum to create bridges between high schools and postsecondary institutions. Educators hope that by blurring the lines between high school and college, students will learn more and succeed more often in college (Pauly et al., 1995; Lovelace, 1990; Ramer, 1991). This approach may take many forms including dual credit systems, postsecondary technical certificate programs, and workplace-based apprenticeships. The most significant program in this general category, however, is Tech Prep (Grubb, 1995).

With the exception of Tech Prep, few of these arrangements have been systematically evaluated. With more schools improving their record-keeping systems, and a growing interest in accountability, it is likely that more research will undoubtedly be published in this area in the next few years (Rodriguez, 1995).

Researchers at Mathematica Policy Research recently conducted a major national study of Tech-Prep programs. According to this study and other smaller evaluations of Tech-Prep programs in Washington state, Texas, Mississippi, and South Carolina, the numbers of schools developing articulation agreements are increasing rapidly, as are the numbers of students taking advantage of them. For example, surveys have indicated a 20 percent increase in the number of schools participating in the Tech-Prep programs and an even larger increase in the number of students participating in the programs between 1993 and 1994. As reported in the same study, an estimated 97 percent of Tech-Prep seniors graduated from high school in the spring of 1994; of these seniors, 56 percent entered postsecondary education or training the following fall. A year earlier, fewer than half of Tech-Prep graduates enrolled in postsecondary activities (Silverberg, 1996).[13]

While findings from the Mathematica evaluation of Tech Prep are quite positive, other studies of Tech-Prep programs offer somewhat less encouraging results. Even though schools are offering more articulation agreements, some evidence suggests that student enrollment in the programs remains low. For example, in Mississippi, over $20,000 was spent in 1991 to train and assist 50 secondary and postsecondary teachers and counselors in developing articulation agreements. However, only 23 students took advantage of those opportunities that year (Hutchinson, 1994). Another evaluation of Tech Prep (in South Carolina in 1993) failed to provide evidence that Tech-Prep students attend 2-year colleges at a higher rate, or that they get better jobs than non-Tech-Prep students (Bucci, 1995).

Admission Requirements

In response to alarm about the low achievement levels of K–12 students expressed in such publications as *A Nation at Risk*, many postsecondary institutions, often prompted by states, have begun to make their admission requirements more rigorous (Rodriguez, 1995). By doing so, high school educators believe that students will have stronger incentives to take more challenging courses, which will, in turn, enhance the rigor of the high school academic curriculum, thereby reducing students' needs for remediation in postsecondary education (Nathan, 1995; Pelavin & Kane, 1990; Flannagan, 1992).

---

[13] These increases in graduation and postsecondary enrollments reflect several factors. Larger numbers of students were undoubtedly moving through Tech-Prep programs as consortia became more established and expanded their operational capacity. However, some portion of the reported increase may be due to an improved ability to track student progress. Thus, computed growth rates are likely to overestimate the net increase in these outcomes, according to the authors of the Mathematica study.

According to data collected by the National Center for Education Statistics (NCES), since the early 1980s, high school students have taken more units of academic and advanced courses. High school seniors have reported that their primary reason for taking mathematics and science courses in high school is to meet college requirements (U.S. Department of Education, NCES, 1994). In 1992, four out of ten American high school graduates completed four years of English, three years of social studies, mathematics, and science—an increase of 27 percent since 1982. This increase applied to all racial and ethnic groups, males and females, and students in academic and vocational programs. More than one-third of 1990 high school graduates completed a sequence of at least 2.5 Carnegie units that included Algebra I, Algebra II, and geometry. This represents an increase over 1982, when only one-fifth of high school students took these courses. In addition, students completed more science courses in 1990 than in 1982. For example, 48 percent of high school graduates completed both biology and chemistry in 1990, while only 28 percent completed both courses in 1982.

The evidence is somewhat mixed on whether more rigorous admission requirements have positively influenced student achievement. Nevertheless, a few states have documented positive change in student achievement, which they attribute to increased graduation requirements. Since 1990, for example, the Oklahoma State Regents for Higher Education have conducted two admission policy impact studies that show improvements in the preparation of students entering the public college university system. These studies reported that students' ACT scores increased, their retention improved, and their college grades rose. Similarly, recent data from the Illinois High School Feedback System show that freshmen who completed the required number of years in high school academic courses were more likely to satisfactorily complete their first course in postsecondary English, mathematics, and science and were more likely to earn As and Bs than students who did not meet the same requirements (Rodriguez, 1995). Higher education officials themselves believe that students who have taken a strong academic core curriculum in high school are more likely to enroll and succeed in college than students who have taken fewer courses (Pelavin & Kane, 1990).

On the other hand, some research has reported that taking more courses does not always lead to higher academic performance. For example, according to a 1992 evaluation of statewide admission standards policy by the Colorado Commission of Higher Education, although the percentage of students meeting institutional admission standards increased statewide, their average academic ability (as measured by ACT and SAT scores of enrolling students) remained about the same (Chilson, 1992). Similar results were documented in a 1992 California eligibility study. This study showed that the percentage of public school graduates who completed the college preparatory curriculum has increased rapidly since 1984, but average total SAT scores for California seniors have remained fairly constant since 1985 (California Postsecondary Education Commission, 1992).

Similarly, raising college entrance requirements does not appear to reduce the number of students requiring remediation at the postsecondary level. In 1983, the Oregon Board of Higher Education adopted a statewide admission policy requiring 3 units of mathematics and 2 units of science (Davis & Pierce, 1983). Despite these additional requirements, postsecondary institutions in Oregon continue to document the need for remediation in mathematics. Likewise, according to the Southern Regional Education Board (SREB), the percentage of freshmen at two-year colleges assigned to a remedial mathematics course ranges from 28 percent to 75 percent in a group of southern states (SREB, 1998).

There is mixed evidence about whether higher academic requirements for access to postsecondary education adversely affect minorities. As an example, Pelavin (1990) found that average ACT composite scores for students in minority groups who completed their core college prep curriculum exceeded the average scores of those who did not. Further, when minority high school students took a prescribed sequence of college preparatory courses, their college attendance rates closely matched those of whites. However, in states such as Kentucky and Florida, studies have shown that the gap between the percentages of white and minority students who were prepared for college-level work in the areas of mathematics, reading, and writing has widened since the states instituted more rigorous admission requirements (Rodriguez, 1995).

Summary

To raise academic achievement and help students make a successful transition between high school and two- or four-year postsecondary institutions, high schools have tried out a number of strategies that involve articulation agreements with colleges and raising college admission standards. In particular, high schools have attempted to achieve better alignment between secondary and postsecondary curricula by integrating course material, sequencing courses, or using college admission requirements to strengthen students' preparation for college. While the numbers of schools with formal articulation agreements and other arrangements with colleges have increased, little is known about their effects on student achievement, the probability of attending college, or the probability of succeeding in college. Some studies have shown that while such agreements increase the proportion of graduates who can meet college entrance requirements, they do not necessarily improve students' academic achievement or predict success once students enroll. Moreover, some researchers have concluded that the introduction of more rigorous admission requirements has sometimes had the unintended effect of reducing the percentage of minority students who apply and are admitted.

References

Bucci, P. (1995). *PACE Model Tech Prep Education Project: Evaluation report.* Washington, DC: Academy for Educational Development.

California Postsecondary Education Commission. (1992). *Eligibility of California's 1990 high school graduates for admission to the state's public universities.* Sacramento, CA: Author.

Chilson, M.P. (1992). *An evaluation of a statewide admission standards policy.* Denver, CO: Colorado Commission on Higher Education.

Davis, W.E., & Pierce, L. (1983). *Strategic plan for the Oregon State system of higher education 1983–1984.* Eugene, OR: Oregon State Board of Higher Education.

Flannagan, P. (1992). *Raising standards: State policies to improve academic preparation for college.* Washington, DC: Westat, Inc.

Grubb, N. (1995). *Education through occupations in American high schools.* New York: Teachers College Press.

Hutchinson, R.N. (1994). *School university partnerships: A status report.* Washington, DC: Education Resources Information Center. (ERIC Microfiche Collection No. ED 381 093)

Kazis, R., & Niles, J. (1994). Youth apprenticeship: Issues and practice in the development of state systems. In *Learning that works: A school-to-work briefing book.* Cambridge, MA: Jobs for the Future.

Lovelace, B. (1990). *2 (secondary) + 2 (postsecondary) articulated curriculum for health occupations: A how-to manual.* Austin, TX: Paris Junior College. (ERIC Document Reproduction Service No. ED 322 939)

Nathan, J. (1995, February 15). To improve high schools, change college admission policies. *Education Week, 14*(21).

Pauly, E., Kopp, H., & Haimson, J. (1995). *Home-grown lessons: Innovative programs linking school and work.* New York: Manpower Demonstration Research Corporation.

Pelavin, S., & Kane, M. (1990). *Changing the odds: Factors increasing access to college.* New York: The College Board.

Ramer, M. (1991). *Community college/high school articulation in California: 2+2 program definition and barriers to implementation.* Sacramento, CA: California Community College Administrators for Occupational Education.

Rodriguez, E. (1995). *College admission requirements: A new role for states.* Denver, CO: Education Commission of the States.

Silverberg, M. (1996). *Building school-to-work systems on a tech-prep foundation.* Princeton, NJ: Mathematica Policy Research, Inc.

Southern Regional Education Board. (1998). *Educational Benchmarks 1998.* Atlanta, GA: Author.

U.S. Department of Education, National Center for Education Statistics (NCES). (1994). *High school course taking in the core subject areas: Indicator of the month.* Washington, DC: Author.

Suggested Reading

Bragg, D. (1994). *Tech prep implementation in the United States: Promising trends and lingering challenges.* Berkeley, CA: National Center for Research in Vocational Education.

Bragg, D. (1995). *Linking high schools to postsecondary institutions: The role of tech prep.* New York: Teachers College Press.

Bragg, D., Kirby, C., Puckett, P., Trinkle, K., & Watkins, L. (1994). *Building a preferred future with tech prep systems.* Berkeley, CA: National Center for Research in Vocational Education.

Brown, D., Minor, C., & Jepsen, D. (1992). Public support for career development activities in America's schools: Report of the 1989 NCDA survey. *The School Counselor, 39,* 257–262.

Chapman, D.W., O'Brien, C.J., & DeMasi, M.E. (1987, Spring). The effectiveness of the public school counselor in college advising. *Journal of College Admissions, 115,* 11–18.

Cibulka, J. (1996). *Coordination among schools, families, and communities.* Albany, NY: State University of New York Press.

Comer, J.P., Haynes, N.M., Joyner, E.T., & Ben-Avie, M. (Eds.). (1996). *Rallying the whole village: The Comer process for reforming education.* New York: Teachers College Press.

Decision Information Resources. (1995). *Evaluation of tech prep system development and implementation in Texas public schools and institutions of higher education.* Houston, TX: Author.

Foothill Associates. (1997). *California partnership academies 1995–1996 evaluation report.* Nevada City, CA: Author.

Hoffer, T. (1997). *High school graduation requirements: Effects on dropping out and student achievement.* New York: Teachers College Press.

Hoffer, T., Rasinski, T.V., & Moore, C. (1995). *Social background differences in high school mathematics and science course taking and achievement.* Washington, DC: U.S. Department of Education, National Center for Education Statistics.

Hotchkiss, L., & Vetter, L. (1987). *Outcomes of career guidance and counseling.* Columbus, OH: National Center for Research in Vocational Education.

Johnson, R.G., Stewart, N.R., & Eberly, C.G. (1991). Counselor impact on college choice. *The School Counselor, 39,* 84–90.

Katz, R.H., Jackson, L.J., Reeves, K., & Benson, C.S. (1995). Urban career magnet high schools. In. W.N. Grubb (Ed.), *Education through occupations in American high schools: Vol. I* (pp. 114–133). New York: Teachers College Press.

Lieberman, A., & Grolnick, M. (1996, Fall). Networks and reform in American education. *Teachers College Record, 98*(1), 7–45.

McCharen, B. (1995). *Guidance and counseling: An essential component for effective integration.* New York: Teachers College Press.

Nielsen-Andrew, E., & Grubb, N. (1992). *Making high schools work: Patterns of school reform and the integration of vocational and academic education.* Berkeley, CA: National Center for Research in Vocational Education.

Perry, N. (1993, November 29). School reform: Big pain, little gain. *Fortune,* pp. 130–138.

Pollack, J. (1995). *The relationship between gains in achievement in mathematics and selected course taking behaviors.* Washington, DC: U.S. Department of Education, National Center for Education Statistics.

Rahn, M.L., Alt, M.N., Emanuel, D., Ramer, C.G., Hoachlander, E.G., Holmes, P., Jackson, M., Klein, S.G., & Rossi, K. (1995). *Getting to work: A guide for better schools.* Berkeley, CA: National Center for Research in Vocational Education.

Silverberg, M. (1995). *The emergence of tech-prep at the state and local levels.* Princeton, NJ: Mathematica Policy Research, Inc.

Silverberg, M. (1996). *The continuing development of local tech-prep initiatives.* Princeton, NJ: Mathematica Policy Research, Inc.

Stern, D., Dayton, C., Paik, I., & Weisberg, A. (1989, Winter). Benefits and costs of dropout prevention in a high school program combining academic and vocational education: Third-year results from replications of the California partnership academies. *Educational Evaluation and Policy Analysis, 11*(4), 405–416.

Stern, D., Raby, M., & Dayton, C. (1992). *Career academies: Partnerships for recontructing American high schools.* San Francisco, CA: Jossey-Bass.

FORGE ACTIVE STUDENT SUPPORT ALLIANCES INVOLVING EDUCATORS, EMPLOYERS, PARENTS, AND COMMUNITIES

Introduction

In a society where young people face a myriad of new challenges, not the least of which is the need to function successfully in the workplace, schools are making new and deeper connections with their stakeholders so that they can better prepare students for productive lives. Schools are seeking out partnerships with local employers to create workplace experiences, working to involve parents more, and identifying resources and expertise in their communities to help meet a host of urgent nonacademic needs. In short, schools are no longer just a place where students come to learn. More and more, schools are expected to perform multiple roles, including many the family used to perform.

Teachers, in particular, are learning roles that go well beyond standing in front of a classroom. They are among the most important points of contact for most students, and have the potential for making major differences in the lives of students as mentors, supporters, and persons who can help link students' school and out-of-school experiences. *Employers* are collaborating with their local high schools in a range of ways, the most important of which is to create real work experiences for students that are closely connected to classroom learning. *Community organizations* are working with schools to help students and their families cope with financial, health, parenting, drug abuse, or other problems. In particular, social service organizations increasingly want to collaborate with other organizations to "work smarter, share important information, build a collective set of resources, and keep their focus on . . . youth" (National Center for Research in Vocational Education, 1998). Finally, schools are renewing their efforts to reach out to *parents*, recognizing that they cannot help students achieve without this crucial source of strength and support.

This section presents research findings on the effects of expanding the roles of these key groups of stakeholders in secondary education:

- Educators,
- Community organizations,
- Parents,

BEST COPY AVAILABLE

- Employers, and
- Mentors.

Alliances With Educators

The most obvious source of support for students within schools is their teachers; however studies have shown that the potential of the student-teacher relationship is often less than fully realized. To maximize the opportunities for teachers to make a difference, schools have begun to create conditions that are more conducive to fostering stronger bonds between teachers and students. Examples of such efforts include reducing class size, organizing schools-within-a-school, and assigning cohorts to teacher-advisors who follow the same cohort throughout high school (Pauly, Kopp, & Haimson, 1995). In many schools, teachers are assuming more active roles in career development efforts, which strengthen their ongoing connection with students (Hershey, Hudis, Silverberg, & Haimson, 1997).

A growing body of research indicates that strategies like these pay off in important ways. An evaluation of the California Partnership Academies, for example, found that students who were in close contact with teachers were more likely to increase their grade point averages (GPAs), complete more and higher level courses, and stay in school (Little, 1993). According to an internal evaluation of the Southern Regional Educational Board's (SREB) *High Schools That Work Program (HSTW)*, students who received personal tutoring by their teachers after school in reading and mathematics were more likely to have higher test scores than their counterparts who did not receive such tutoring (Bottoms & Mikos, 1996).

Closer teacher-student relationships appear to result in increased student engagement in school, improved school attendance and retention, and increased student interaction among those from different ethnic, racial, and socioeconomic backgrounds. To take full advantage of the teacher-student relationship, however, teachers need ample support and training. Professional organizations are just beginning to recognize this need. They are providing training opportunities to both pre-service and in-service teachers to promote the unique set of skills needed to fully develop their potential to get students and their families involved in school (Shartrand, Weiss, Kreider, & Lopez, 1997).

Alliances With Community Organizations

The movement to promote linkages between community organizations and schools arises from two developments. First, contemporary schools are increasingly being called upon to provide a range of services to students and their families that, until recently, were not in the traditional domain of secondary education. These include health and mental health care, housing assistance, adult education, family literacy programs, employment counseling, after-school and summer learning programs, recreation centers and sports teams, community service activities, religious groups, and exposure to career areas and cultural institutions. Second, community partnerships are considered to be vital to the success of school-to-work. As a result, school-to-work partnerships are proliferating across the country, and now number in the thousands (Hershey et al., 1997). Coordination among all the partners involved in school-to-work is seen as essential to ensure the highest quality work- and school-based learning experiences (Brustein & Mahler, 1994).

A small, but quite convincing group, of studies have documented the benefits of improved partnerships between high schools and community organizations. A recent evaluation of the California Healthy Start School-Linked Services Initiative, for example, found that school-linked services, especially when parents were involved, enhanced student performance (Golan, Wagner, Shaver, Wechsler, & Williamson, 1996). In addition, an evaluation of Communities in Schools, Inc.—a stay-in-school program aimed at bringing together disparate services in a coordinated school-based center—showed that 68 percent of the participants improved their attendance; 49 percent of the students with GPAs of 1.99 or lower improved their GPAs; and 79 percent of the students with GPAs lower than 1.0 in the previous year increased them by more than 1 point the following year (Rossman & Morley, 1995). Finally, a study of the New Futures program—which offers a model for communities to plan, finance, and deliver educational, health, and other services to at-risk youth—reported that the percentage of students scoring in the lowest quartile on a reading achievement test decreased over a period of five years, as did the dropout rate. However, the number of high school seniors who were accepted to college or who had a full-time job lined up by the spring of their senior year did not increase significantly (Center for the Study of Social Policy, 1995).

In another evaluation, researchers used an experimental design to estimate the impacts on students of Quantum Opportunities, a community-based nonprofit organization with a mission to put in-school, at-risk youth back on track through intensive tutoring, homework assistance, computer-assisted instruction, life and family skills, and career counseling. The evaluation, which is ongoing, showed that Quantum participants were more likely than their peers in a control group of students who did not participate, to graduate from high school (63 versus 42 percent), to pursue higher education (42 versus 16 percent), to attend a four-year college (18 versus 5 percent), and to attend a two-year college (19 versus 9 percent). In addition, Quantum participants were less likely to drop out of school than nonparticipants (23 versus 50 percent) (Hahn, Leavitt, and Aaron, 1994).

Alliances With Parents

Parents (or guardians) are a key part of students' support systems, and their involvement with their children's schooling helps children perform better in school. Parental involvement can take many forms, including visiting schools, attending education programs for parents, talking to teachers, helping students make career and college plans, becoming volunteers, establishing homework guidelines, participating in decision-making committees such as parent-teacher organizations, and creating family resource centers (Moles, 1993). Teachers ranked strengthening parents' roles in their children's learning as the objective that should receive the highest priority in public education policy over the next few years (Louis Harris and Associates, 1993).

Despite considerable evidence (reviewed below) that parental involvement has a positive and significant impact on students, studies have shown that parents are not as involved as they should be or even want to be. For example, in one study 40 percent of parents across the country reported that they are not devoting enough time to their children's education (Finney, 1993). In another, almost half of 14- to 17-year-old students reported that they want to talk to their parents more often about schoolwork (National Commission on Children, 1991), and in a third, 89 percent of company executives expressed their belief that the biggest obstacle to successful school reform is lack of parental involvement (Perry, 1993).

The evidence continues to accumulate that parental involvement matters (Shartrand et al., 1997). For instance, Keith and Keith (1993) found that parental involvement in students' academic lives has a powerful influence on student achievement across all academic areas. In Barton and Coley's study (1992), the researchers reported that student achievement (as measured by standardized test scores) can be raised by parents who ensure that their children attend school regularly, read at home, and turn off the TV. Similarly, Henderson and Berla (1994) learned that families who are consistently informed about their children's progress at school tend to have higher achieving children. Horn and Chen (1998) established that at-risk students who make it to college differ from their peers who do not in that they receive strong, consistent support from their parents throughout their education.

Alliances With Employers

While employer involvement with schools is not new, recent education reforms, such as the School-to-Work Opportunities Act, have reemphasized the importance of developing partnerships with local businesses and business organizations. The National Employer Leadership Council (NELC) created an Employer Participation Model that describes how employers and union leaders can become involved in education—by providing leadership and acting as catalysts for change, developing career awareness activities, working with other partners in system planning and curriculum development, serving as mentors, volunteering on advisory councils, and providing work-based learning opportunities for students and teachers.

Although participation in training future workers would appear to be in the best interest of employers, the idea has not taken as strong a hold in the business community as one might expect. Several studies have established that while many schools offer apprenticeships, cooperative (co-op) education, and internships in principle, only a handful of students actually get to participate in them (Visher, Lauen, Merola, & Medrich, in press; Decision Information Resources, 1995; Hershey et al., 1997). Employers' reluctance to work with schools may be related to perceived costs, restricting laws and regulations, negative opinions about the quality of young workers, and inexperience with curriculum development and related projects (Pauly et al., 1995).

Research has demonstrated that when students do have the opportunity to experience working in supportive, structured environments, they benefit in many ways. Indeed, it is surprising how much they benefit, given the brevity of most work experiences. Students—particularly students who are at-risk—tend to fare better in the job market after graduation and have better attitudes towards school when they work during high school. In an extensive study of co-ops, Stone (1995) found that co-op students who stayed with the same employer once they left school earned higher wages.[14] In SREB's *HSTW* network, Bottoms and Creech (1997) found that students who worked up to 15 to 20 hours per week in quality work-based learning programs were able to improve their reading, mathematics, and science scores, compared with students who did not work at all or worked more than 20 hours weekly.

Mentoring

Mentoring, a particularly intense form of one-on-one intervention used with at-risk youth, has been shown to have significant and positive impacts on student achievement. Because of changes in families and communities, increasingly large numbers of youth have few opportunities for positive contacts with adults. To address this need, a number of mentor programs were formed during the 1980s. In these programs, interested adults—often employers but also other individuals such as college students and senior citizens—offer emotional support, guidance, tutoring, and other assistance to students. Unfortunately, many schools and programs find it difficult to recruit enough adults to serve as mentors, severely limiting the number of such of relationships. For example, Visher et al. (in press) found that while 25 percent of all public high schools reported running mentoring programs, only 5 percent of their students actually participated.

---

[14] See the section "Link Students' Out-of-School Learning Experiences to Classroom Learning."

Summary

In order to prepare students for the many challenges they face, schools are learning to reach out to their local stakeholders to take full advantage of the resources available to them. Partnerships with employers, linkages with social service and other community organizations, and deeper bonds with parents and teachers all benefit students. Although schools cannot lose sight of their primary mission and responsibilities—that of educating youth for productive lives—their capacity to do so can be substantially enhanced with the help of others. Changing the organizational structure of schools can lead to tighter bonds between teachers and students. Partnerships with community-based organizations can alleviate the need for schools to address their students' legal, medical, and financial issues single-handedly, while employers can help design curricula, serve on advisory councils, provide work-based learning activities, and serve as mentors. Finally, families can establish homework guidelines for students, participate in decision-making committees, and develop stronger communication links with teachers. All of these relationships translate, in varying degrees, to improved student attitudes toward and engagement in school, better grades, higher graduation rates, enrollment in postsecondary education, and a host of other positive outcomes.

References

Barton, P., & Coley, R. (1992). *America's smallest school: The family.* Princeton, NJ: Educational Testing Services.

Bottoms, G., & Creech, B. (1997). *Reading performance of career bound students: Good news for the 1996 High Schools That Work assessment.* Atlanta, GA: Southern Regional Education Board.

Bottoms, G., & Mikos, P. (1996). *Seven most-improved High Schools That Work sites raise achievement in reading, mathematics, and science.* Atlanta, GA: Southern Regional Education Board.

Brustein, M., & Mahler, M. (1994). *AVA guide to the School-to-Work Opportunities Act.* Alexandria, VA: American Vocational Association.

Center for the Study of Social Policy. (1995). *Building new futures for at-risk youths: Findings from a five-year, multi-site evaluation.* Washington, DC: Author.

Decision Information Resources. (1995). *Evaluation of tech prep system development and implementation in Texas public schools and institutions of higher education.* Houston, TX: Author.

Finney, P. (1993, May 17). The PTA/Newsweek National Education survey. *Newsweek, 121*(20).

Golan, S., Wagner, M., Shaver, P., Wechsler, M., & Williamson, C. (1996). *From principles to action: Local implementation of California's Healthy Start school-linked services initiative.* Menlo Park, CA: SRI International.

Hahn, A., Leavitt, T., & Aaron, P. (1994). *Evaluation of the Quantum Opportunities Program (QOP). Did the program work? A report on the postsecondary outcomes and cost effectiveness of the QOP program (1989–1993).* Waltham, MA: Brandeis University, Heller Graduate School.

Henderson, A., & Berla, N. (Eds.). (1994). *A new generation of evidence: The family is critical to student achievement.* Washington, DC: National Committee for Citizens in Education.

Hershey, A., Hudis, P., Silverberg, M., & Haimson, J. (1997). *Partners in progress: Early steps in creating school-to-work systems.* Princeton, NJ: Mathematica Policy Research, Inc.

Horn, L., & Chen, X. (1998). *Toward resiliency: At-risk students who make it to college.* Washington, DC: U.S. Department of Education, Office of Educational Research and Improvement.

Keith, T., & Keith, P. (1993). *Integrating services for children and families: Understanding the past to shape the future.* New Haven, CT: Yale University Press.

Little, J.W. (1993). Professional community in comprehensive high schools: The two worlds of academic and vocational teachers. In J.W. Little & M. McLaughlin (Eds.), *Teachers' work: Individuals, colleagues, and contexts.* New York: Teachers College Press.

Louis Harris and Associates. (1993). *Metropolitan Life Survey of the American Teacher 1993.* New York: Author.

Moles, O. (1993). Collaboration between schools and disadvantaged parents: Obstacles and openings. In Chavken (Ed.), *Families and schools in a pluralistic society.* Albany: State University of New York Press.

National Center for Research in Vocational Education (NCRVE). (1998, August). The role of community partnerships in school-to-work programs. *Centerfocus, 20,* 1–6. Berkeley, CA: Author.

National Commission on Children. (1991). *Speaking of kids: A national survey of children and parents.* Washington, DC: Author.

Pauly, E., Kopp, H., & Haimson, J. (1995). *Home-grown lessons: Innovative programs linking school and work.* New York: Manpower Demonstration Research Corporation.

Perry, N. (1993, November 29). School reform: Big pain, little gain. *Fortune,* pp. 130–138.

Rossman, S., & Morley, E. (1995). *The national evaluation of of cities and schools: Executive summary.* Washington, DC: The Urban Institute.

Shartrand, A.M., Weiss, H.B., Kreider, H.M., & Lopez, M.E. (1997). *New skills for new schools: Preparing teachers in family involvement.* Cambridge MA: Harvard Family Research Project, Harvard Graduate School of Education.

Stone, J. (1995). Cooperative vocational education in the urban school: Towards a systems approach. *Education and Urban Society, 27*(3), 328–352.

Visher, M., Lauen, D., Merola, L., & Medrich, E. [in press]. *School-to-work in the 1990s: A look at programs and practices in American high schools.* Washington, DC: U.S. Department of Education.

Suggested Reading

Bailey, T. (Ed.). (1995). *Learning to work: Employer involvement in school-to-work transition programs.* Washington DC: The Brookings Institute.

Baker, R., Wilmoth, J.N., & Lewis, B. (1989). *Factors affecting student achievement in a high school principles of technology course: A state case study.* Auburn University: Center for Vocational and Adult Education.

Bottoms, G., Creech, B., & Johnson, M. (1997, June). Academic and vocational teachers working together contribute to higher levels of student achievement. *High Schools That Work Research Brief, 9,* 1–8.

Cave, G., & Quint, J. (1990). *Career beginnings impact evaluation: Findings from a program for disadvantaged high school students.* New York: Manpower Demonstration Research Corporation.

Cibulka, J. (1996). *Coordination among schools, families, and communities.* Albany, NY: State University of New York Press.

Clark, R.M. (1990, Spring). Why disadvantaged students succeed. *Public Welfare, 48*(2), 17–23.

Colorado State Department of Education. (1995). *High expectations, high achievements: State report card 1995. K–12 public education in Colorado.* Denver, CO: Author.

Comer, J.P., Haynes, N.M., Joyner, E.T., & Ben-Avie, M. (Eds.). (1996). *Rallying the whole village: The Comer process for reforming education.* New York: Teachers College Press.

Cunanan, E.S., & Maddy-Bernstein, C. (1997). *Exemplary career guidance programs 1995: Secondary and postsecondary.* Berkeley, CA: National Center for Research in Vocational Education.

Foothill Associates. (1997). *California partnership academies 1995–1996 evaluation report.* Nevada City, CA: Author.

Grubb, N. (1995). *Education through occupations in American high schools.* New York: Teachers College Press.

Hoover-Dempsey, K., & Sandler, H. (1995, Winter). Parental involvement in children's education: Why does it make a difference? *Teachers College Record, 97*(2), 310–331.

Katz, R.H., Jackson, L.J., Reeves, K., & Benson, C.S. (1995). Urban career magnet high schools. In. W.N. Grubb (Ed.), *Education through occupations in American high schools: Vol. I* (pp. 114–133). New York: Teachers College Press.

Lieberman, A., & Grolnick, M., (1996, Fall). Networks and reform in American education. *Teachers College Record, 98*(1), 7–45.

Lovelace, B. (1990). *2 (secondary) + 2 (postsecondary) articulated curriculum for health occupations: A how-to manual.* Austin, TX: Paris Junior College. (ERIC Document Reproduction Service No. ED 322 939)

Mapp, K. (1997). *Making the connection between families and schools.* Cambridge, MA: Harvard Graduate School of Education.

Mortimer, J., & Finch, M. (1996). *Adolescents, work, and family.* London: Sage Publications, Inc.

Rahn, M.L., Alt, M.N., Emanuel, D., Ramer, C.G., Hoachlander, E.G., Holmes, P., Jackson, M., Klein, S.G., & Rossi, K. (1995). *Getting to work: A guide for better schools.* Berkeley, CA: National Center for Research in Vocational Education.

Really, J. (1992). *Mentorship: The essential guide for schools and business.* Dayton, OH: Ohio Psychology.

Silverberg, M. (1995). *The emergence of tech-prep at the state and local levels.* Princeton, NJ: Mathematica Policy Research, Inc.

Silverberg, M. (1996a). *Building school-to-work systems on a tech-prep foundation.* Princeton, NJ: Mathematica Policy Research, Inc.

Silverberg, M. (1996b). *The continuing development of local tech-prep initiatives.* Princeton, NJ: Mathematica Policy Research, Inc.

Stern, D., Dayton, C., Paik, I., & Weisberg, A. (1989, Winter). Benefits and costs of dropout prevention in a high school program combining academic and vocational education: Third-year results from replications of the California partnership academies. *Educational Evaluation and Policy Analysis, 11*(4), 405–416.

Stern, D., Raby, M., & Dayton, C. (1992). *Career academies: Partnerships for recontructing American high schools.* San Francisco, CA: Jossey-Bass.

Way, W. (1997). *Lessons from life's first teacher: The role of the family in adolescent and adult readiness for school-to-work transition.* Berkeley, CA: National Center for Research in Vocational Education.